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OF BENGAL

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VOLUME III

1937

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The Racial Affinities of the Jews of Cochin.

By EILEEN W. ERLANSON MACFARLANE.¹

THE COMMUNITIES AND THEIR TRADITIONS.

The Jews of Cochin are a small but ancient colony of people who practise the Judaic religion. Tradition says that they came to the Malabar coast in thousands from Palestine at the time of the destruction of the second Temple, 70 A.D. (Galletti, Lawson, C. A. Menon), and that some came even earlier (Day, Logan). These Jews believe that there was a small Jewish kingdom at Cranganore, a few miles north of the present port of British Cochin. They say that their ancestors owned lands and were granted privileges by one of the early Cochin Rajas, and that they lived at Cranganore, or Shingli as they called it, in peace and prosperity for centuries. Sometime not long before the arrival of the Portuguese in those parts the Jewish kingdom was rent by internal dissensions and a family feud among the rulers. The little community fared badly in local wars in the sixteenth century and was finally destroyed (Correa, Day). After this the Cochin Jews were scattered over the State and suffered persecutions and some of the terrors of the Portuguese Christian inquisition which were well known to their co-religionists in Europe but which they had previously been spared under the patronage of tolerant Hindu rulers.

When the Portuguese were ousted by the Dutch in 1663 the Jews, who aided the new-comers, again received favourable treatment which was continued when the British took over Cochin Port in 1795. For over a hundred years now this fragment of a downtrodden, exiled people have lived in peace worshipping God and abiding by his law as given to their forefathers through Moses. They have been left undisturbed to enjoy the proceeds of their lands and of their trading activities.

Even though the total number of Jews in Cochin was only 1,451 in the 1931 census, they are divided into two major endogamous communities each harbouring bitter memories of betrayals, oppression and slanders against the other. The two sects are known as the White Jews and the Black Jews. The former, though very much in the minority, are the wealthier community, better educated, more progressive and better known outside Cochin. The White Jews live in the world-famous Jew Town Street, which was built with the help of the Dutch in 1664, and is one of the local sights for tourists. There are

¹ Collaborator in Asiatic Research, University of Michigan, U.S.A.

only a little more than a hundred of them left, for their birthrate is low and many of their ambitious young men have gone to Bombay in recent years. They have one Synagogue next to the Raja's palace in Mattanchery, which was also built by the Dutch.●

The White Jews are careful to preserve the purity of their stock and they marry only among themselves, or with an occasional non-Indian Jew trader from outside. Consequently they are highly inbred, and although some of them are swarthy this comes from Bagdadi and Yemen ancestors rather than from Indians (Hallegua). They are regarded as members of the 'White Race' by the United States Government and one of them obtained American citizenship since the World War.¹ They say that they are pure or true Jews whose ancestors came from Palestine and were the ruling class in the Jewish principality of Shingli. As evidence for this they display some antique engraved copperplates which record certain privileges and powers bestowed on a Joseph Rabban by a Raja long ago. These early immigrants, they say, were joined from time to time by Jews from Arabia, Egypt, Germany and Spain who had heard of the happy life of the Jews in Kerala. The White Jews disclaim any native Indian ancestors. They say that the Black Jews are the descendants of the converted and freed Indian slaves of their ancestors. They are rapidly becoming Europeanized in dress and customs. Several of them are well educated and nearly all speak English as well as Malayalam.

The Black Jews numbered 1,307 at the 1931 census when it was recorded that, because of their isolation and exclusiveness, they too are a dying community (T. Menon). Over 900 of them live in Ernakulam and Mattanchery on Cochin Harbour; there are small settlements at Chenamangalam, at Malla and at Parur in north Travancore. They are all decidedly brown-skinned and resemble physically the Moplah Mohammedans (C. A. Menon). Most of them are poor and illiterate, although the boys are taught to read Hebrew. Their houses and huts are built in the Malayali style, and their native speech is Malayalam. Both sexes usually wear a coloured plaid lower cloth (mundu). The men always wear a coloured skull cap; they may wear a shirt or go bare above the waist. Many still have the traditional Jewish side-curls. The women have cotton jumpers with sleeves; they usually place a folded coloured cloth on their heads when out-of-doors. The community has seven synagogues in the region. They are very orthodox, devout followers of Judaism and strict Sabbatarians even though the observance of a complete holiday for twenty-four hours after sunset on Fridays makes it difficult for them to get permanent employment. Many of them are poultry dealers, others have small retail shops. They have

¹ This man belonged to the Zackay family. Hallegua says that the Zackays originally came to Cranganore in the fifteenth century. The name is now extinct in Cochin.

long been famous for their hand book binderies, a trade that is being ousted by machines.

Because they are shy and suspicious and only a few of them can speak English, their version of their own origin is little known. These Black Jews say that they too are true, pure Jews and the actual descendants of the original Jewish immigrants to Malabar who owned the Jewish kingdom (Buchanan, Lord). They blame their dark skins chiefly on more than a millenium of residence in the Tropics (C. A. Menon), as do also the South Indian Brahmins. The Black Jews declare that none of the present White Jews is descended from a Cranganore Jew, but that they are recent immigrants and have only been in these parts for some four hundred years. To support this contention they point to their own numerical superiority, and to the fact that their synagogues are always named either Kadvoobagam or Theckoobagam after the two synagogues in Cranganore, while the White Jews' synagogue is called Parathesi, which is a Sanskrit word used locally to designate foreigners. They claim that the copperplates were taken from their ancestors by the White Jews; or that the originals are lost and the White Jews now have only copies. These claims were upheld by Lord but there is no evidence to support them.

There is a sub-community of the White Jews, locally called the Manumitted or Brown Jews, who are descended from the Indian convert concubines of White Jews. There are now less than a score of them in Cochin. They worship with the White Jews, but there is a strong sentiment among the latter against inter-marriage with them. In the past Brown Jews have sometimes been converted to Christianity, or have married among themselves. The fact that the White Jews call these people Manumitted Jews indicates that the old Jewish custom of taking native slave girls as concubines, converting them and later freeing their children was followed in India. Slavery was not abolished in Cochin State until 1854, when 58,000 slaves were freed (C. A. Menon). Day mentions meeting Jewish slaves of Jews.

Few of the White Jews in 1936 knew that there was also a sub-community of manumitted, proselytized Jews among the Black Jews in Ernakulam who were socially ostracized by the others. The Black Jews declare that there have always been at least two communities among themselves, the Meyookasim or pure and genuine Jews, and the *she-enam* Meyookasim, or non-genuine Jews of low-caste Hindu origin. One of the latter protested to a White Jew recently that they were not allowed into the synagogue, although there were only about thirty of them.

This small Jewish colony illustrates excellently the contagious effect of the Hindu caste system on all residents in India of whatever origin. The social classes among the Jews

became crystallized into castes which would not worship together, interdine nor intermarry. In 1881 the Brown and the Black Jews appealed to the Chief Rabbi for the right of equality with other Jews. They were referred to a Rabbinical decision which was given to Cochin Jews three hundred years earlier on the same question. This judgment will be discussed later for it reveals an interesting and unusual attitude towards what constitutes race. The racial affinities of the Cochin Jews, as it will be shown, are complex.

RACIAL STATUS OF THE JEWS.

An anonymous French pamphlet (translated by Miss Gladys David of Cochin) draws attention to a fine sixteenth century manuscript 'The Consultations of Rabbi David Ibu Abi Zimra', which was discovered in the library of the Jewish Theological seminary at Alexandria. This is a long quarto manuscript and contains the reply to an appeal which was made to this great Egyptian Rabbi by some Jews of Cochin. At that time there were 900 families of Jews in Cochin, of which only a hundred were of pure Jewish descent. These latter were poor but arrogant and looked down upon the mixed families, who were influential merchants, called them 'slaves' and would not intermarry with them. The rich but socially inferior class were supposed to be descended from slave girls and Jewish merchants from Aden, Yemen, and Turkey, whose ancestors had been set free or had otherwise obtained their liberty. The question addressed to Ibu Abi Zimra was whether these people were to be treated as true Jews, or as slave Jews, for some of them had no proof of manumittance. Rabbi David gave it as his opinion that all must be considered to be Jews, and those who called them slaves should be punished. A generation later the same question was put to his pupil Rabbi Jacob Castro who died in 1610 (Hallegua).

When the Brown Jews of Cochin appealed to the Chief Rabbi in 1881 for equality, he confirmed Castro's original announcement concerning Jews of mixed descent. English translations of the Rabbi's decision have been published by Lord and by Hallegua. The documents reveal that in the sixteenth century, as now, there were two communities among the Black Jews, Meyookasim (true Jews) and converts or non-Meyookasim. Meanwhile the White Jews refused to recognize any difference between the two and declared that all the others were natives of India, because even the Meyookasim among them were of mixed descent. The Rabbi declared that the Meyookasim of Cochin 'are equal in racial purity to any of the Jews throughout the world'. He stressed the fact that they had always avoided marriage with the sub-community or had disowned any member who did so. But his decision also clearly states that if the

non-Meyookasim will take the Rabbinical bath called *Tabila* they will automatically 'become equal to our Israelite brethren according to the law of the Rabbis'. He, however, reminded them that a Cohen (the priest) is forbidden to marry a convert woman.

That the term 'race' as used by the Chief Rabbi signifies 'people' or cultural group is proved by a sentence in Lord's translation. As a comment on the prescribed marriages between Cohens and converts or the descendants of slaves the decision states 'The observance of such points of racial purity is only a matter of social position; and the issue of the marriage between genuine and converted Jews can be married to priests'. As soon as converts have taken the ritualistic bath or *Tabila* the Rabbi says they will 'no longer be subject to any social distinction', they can marry any Jew and hold any religious distinction. He directs the adult men of the non-Meyookasim to see to it that all their women and children take this bath. From this it is clear that whoever follows the Laws of Moses and adopts the Rabbinical ritualistic practices is a Jew, whatever his or her race.

These communications with the Chief Rabbis were made in the first century of Portuguese domination in Cochin. Ibu Zimra records that it was only after the Portuguese conquests in India that Jews in the West began to know about the Jews in India. The appeals indicate that there were two distinct main sects in the sixteenth century who differed in racial descent, and that there was also a sub-community of converts, just as to-day.

It is doubtful whether a sub-community of native converts and slaves has been kept distinct among the Black Jews through the centuries. When the racial controversy was revived at the end of the last century a section of the Black Jews tried to establish a distinction within the community. Six of the parishes claimed authority over the seventh whose members they said were non-Semitic. After a bitter lawsuit which lasted thirteen years, the Cochin State Judge decided in 1895 that there was no distinction between the parties, and that they both had a similar origin. Anyone familiar with South India will not doubt that sub-castes have existed among the Black Jews, as among all communities. Such sub-castes sometimes base their assertions of superiority on one or two alien ancestors (real or imaginary) of supposedly high social origin.

Distinctly Semitic physiognomies appear among the Black Jews (Plate 4, fig. 17) and are no doubt due to segregation of ancestral types. The Moplah Mohammedans, whom these Jews resemble, are descended from 'Moors' and native women of the Malabar coast. It is noteworthy that there are no Cohens or Levites among the Black Jews. In fact they had no surnames until recently when children took their father's name as a last

name. They say that their ancestors came to India before surnames were adopted (Lord). Among the Black Jews I found that the commonest given name for males was Abraham, with Elias and Moses as close seconds; among the girls Yekara, Sara, Rachel and Esther were most frequent. The favourite names among the White Jews are Elias and Isaac for males, and Esther, Rebecca and Seema for females.

Governor Moens recorded in 1781 that if a White Jew entered a Black Jew's synagogue during a service, the reader retired and the White Jew took charge. This would be a natural action in a socially inferior community. If the Black Jews were the older community it is scarcely credible that they would habitually honour 'foreigners' thus. Visscher also recorded that in the eighteenth century the Black Jews were not a fully privileged class.

The Jews have been a strictly patriarchal people for millenia and they consider themselves to be a distinct race 'the seed of Abraham'. The definition of Jew in most dictionaries is 'An Israelite, a Hebrew. A descendant of Israel and Judah.' Children receive as many genes from their mother as from their father, but in patriarchal families they belong to their father's race socially, whatever the descent of the mother. Kappers points out that the Israelites were mixed even in ancient times, for the prophet Ezekiel records marriages with Amorite women. The Jewish people have wandered over Arabia, the Levant, North Africa and Europe, and whenever they were left in peace for a time they adapted themselves and prospered. Until recently in human history all wealthy people owned slaves. Under Jewish law, as well as the old Indian laws, masters freed their slave women who bore them children. These children would become part of the Jewish communities. Undoubtedly Jews have taken women from the countries of their residence as wives, for both the cephalic indices and the blood group frequencies of Jewish communities in different parts of the world show that the Jews receive genes from surrounding people (Fishburg, Fischer and Lenz).

THE WHITE JEWS.

Historical.—All the White Jews at present living in Cochin are descended from people who came from the West at various times in the past four hundred years. They are a heterogeneous group of Aschkenasim from Germany, Sephardim from Spain via Cairo, as well as Baghdadis and people from Aleppo, Turkey and Yemen. The Malabar or Black Jews therefore declare that the White Jews are a colony of recent immigrants, compared with themselves, none of whose ancestors ever lived in the Cranganore settlement. A consideration of historical data, as will be shown, can throw very little light on the question,

but some of the customs of the White Jews indicate a continuity with a Jewish culture that differs from that of Jews to the West of India and resembles that from which the Malabar Jews also descended.

Unfortunately the history of Kerala, of which Cochin is a part, is almost entirely conjectural and traditional until the arrival of the Portuguese at the end of the fifteenth century. There are a few meagre references in the accounts of mediaeval travellers' and in ancient Tamil works. The only local historical works and records extant date from the seventeenth century (C. A. Menon). The interesting old copperplate grants which are now in the possession of the Syrian Christians and of the White Jews are (Plate 2, figs. 6 and 7) subjects of controversy and uncertainty. Even the date at which these deeds were made varies within one thousand years according to different scholars. Some place it in the year 230 A.D. (Daniel) and others in the 8th and 14th centuries.

Archæological remains show that there were ancient settlements of Christians and of Jews at Cranganore. According to their traditions these 'Syrian' Christians were Brahmins and Nairs who were converted in the first century A.D. by St. Thomas the Apostle. Blood group data from some Syrian Christians of Ernakulam reveal a strong similarity with that of the local Nairs, who of course possess many Brahmin genes (Macfarlane). It is supposed that both the early Christian community and the Cranganore Jews were granted certain special privileges by the Rajas. One of the earliest authoritative records of these plates is in the memorandum of his Malabar administration written by the Dutch Governor A. Moens in 1781. At this time the copperplates of the Syrian Christians were missing and had not been seen since the Portuguese regime. They were found later among the Government records by the British resident, Colonel Macauley, in 1806 (Daniel). Governor Moens records that the Cochin Jews possessed some copperplates which had come into the hands of Ezechiël Rabbi, the richest merchant among them, in 1741. Ezechiël Rabbi translated the copperplate inscriptions for the Governor, who obtained a second translation from a Malayali linguist. The inscription is in Tamil prose containing some Malayalam forms (Daniel). The alphabets used are Vaṭṭeḷuttu and Grantha (Galletti) and every scholar renders the deed somewhat differently (Burnell). The gist of it is that the Raja bestowed on one Joseph Rabban the revenues of a small district, and the right to fire salutes, ride on elephants and horses and to use umbrellas and other decorations in public processions. Some translations also give the Jews remittance of taxes due to the Raja on houses and temples. If the Jews once owned a small principality in Cochin they lost it, probably early in the sixteenth century, and most of the other privileges are not desired nowadays and have therefore fallen into disuse.

Although the Jews no longer fire salutes from a small cannon or mortar, they informed me that this used to be their custom at dawn on wedding days. Governor Moens records that even in his time there was some uncertainty as to whether the copperplate charter was originally granted to the Jews. Some modern scholars (Venkayya, Daniel) have also suggested that these plates properly belong to the Syrian Christians and only came into the hands of the Jews by accident. Moens pointed out that the Jewish claims are well supported by the fact that no other community is permitted to fire salutes at dawn, a privilege that was otherwise reserved solely for the native princes. He records that the Jews of his day were allowed to fire such salutes, but he omits to say whether both the Jewish communities, Black as well as the White, exercised this privilege.

The tradition of a Jewish principality at Cranganore cannot be verified from authentic records although it is mentioned by Gasper Correa. The Jews' own account of their history is given in the Jewish Encyclopedia (1909) by Mr. Naphthali E. Roby who is the present curator of the treasures of the Synagogue, including the copperplates. He is a direct descendant in the fifth generation from the eighteenth century merchant Ezechiel Rabbi. According to their traditions the Jews possessed a small autonomous principality at Angivanam or Shingli, a suburb of Cranganore, where they lived and prospered from the fourth to the fourteenth centuries. The family of the first Jewish chief, Joseph Rabban, became extinct and two brothers who belonged to a wealthy family assumed the rulership. Dissentions and jealousies between the two led to internal strife and riots. The ancestors of the present Black Jews also took one side and demanded equality and the right of inter-marriage. A massacre of the Black Jews by Nair soldiers was planned by the Whites who were outwitted and fell into their own trap. However the treachery of the Black Jews' party was ruthlessly revenged by the other faction with the help of local princes, and the former were driven out of Shingli by force in 1344. If these events actually took place it is probable that both factions contained some purely Semitic Jews and some Jews partially of Indian descent, and that the wealthiest families among the Semites remained in Shingli. An old Synagogue called the Cochin Angandy was built by the Black or Malabar Jews in 1345 (Lord, Roby). When this property was dismantled it was divided between the seven remaining yogakars (congregations) of the Black Jews (Lord). The Black Jews have used the fact that the White Jews had no share in this old synagogue as a proof that the latter had not arrived in Cochin State in 1345.

The White Jews claim that they remained on in Shingli and lived peacefully until the arrival of the Portuguese (Roby), when they suffered attacks both from the Portuguese and the

Moors (Muslims). There is plenty of historical evidence for persecutions of Jews by the Portuguese. In 1513 Albuquerque informed the King of Portugal in a letter that many Jews were coming to India from Spain and Portugal, and asked permission to 'exterminate them one by one' (Danvers). In the following year many Jews emigrated from Cranganore to Goa, Parur (North Travancore) and Southe (near British Cochin). They built a Synagogue at Southe which is now in ruins. The Jews and Christians remaining at Cranganore were again attacked and their houses were looted by the Muslims. The Nairs came to the aid of the Syrian Christians, and the Portuguese successfully drove the remnant of the Jews away from Cranganore in 1565 (de Paiva, Roby). These refugees apparently joined the community at Southey. They were poor and their troubles had not ended for the first Portuguese Archbishop arrived on the West Coast of India in 1560 bringing the Inquisition bent on suppressing the Jews (Danvers). The poor race-proud Jews about whom the wealthier Malabar Jews complained to Rabbi David Ibu Abi Zimra in the second decade of the 16th century were probably the White Jews who left Shingli during the regime of Albuquerque, many of whom may have been Sephardim from Iberia.

When the last of the Jews left Cranganore in 1565 they went to Cochin (port) and received a generous welcome from the Raja who gave them land immediately to the south of his palace in Mattancherry in which to build their houses and Synagogue. The Black Jews say that these were not Jews from Cranganore but some immigrants from the west. There is nothing against both accounts being true, for Jewish merchants would certainly help their unfortunate refugee co-religionists. It is in fact recorded that when the White Jews built their synagogue in 1568, all the expenses were defrayed by a rich Turkish lady, Seethi Mothi, wife of a Sephardim Samuel Castil (Roby). The Black Jews tried to prevent the building of this synagogue and to force the White Jews to worship with them and to intermarry with them. The Black Jews again appealed to the chief Rabbi at Alexandria (Roby), but at the request of the White Jews the Raja commanded the Blacks not to hinder the construction work. The Jews continued to suffer religious persecution at the hands of the Portuguese and when the Dutch appeared and unsuccessfully besieged the Fort at Cochin in 1662, the Jews helped them with provisions and covered their retreat. When the Portuguese discovered that the White Jews had aided their enemy they revenged themselves by burning and looting the Jewish quarter and slaughtering many Jews. All their records were destroyed at this time and they had to flee into the country for safety. The Black Jews were not punished, therefore they had presumably not aided the Dutch.

In 1663 the Dutch captured Cochin (port), they destroyed the Portuguese Churches, looted their houses and drove them out. The White Jews returned from hiding and were welcomed by the Dutch who helped them to rebuild Jewtown Street and the Synagogue. The Black Jews again agitated for equality with the White Jewish minority. A White Jew Shemthob Castiel visited the Dutch Governor-General in Ceylon and complained about the Black Jews. He was given authority over them and also over the White Jews, and the Raja of Cochin was directed to uphold him. When he returned he punished the Black Jews severely, apparently imprisoning and killing the most troublesome among them, and peace was restored.

There is an interesting account of the Cochin Jews written in 1687 by a Jewish merchant Moses Pereira de Paiva who came to Cochin on a visit to his co-religionists with three other Jewish merchants from Amsterdam in 1686. This has been republished in Portuguese (Amzalak) with an introduction containing data from other Portuguese records. A Portuguese priest in Cochin recently translated this pamphlet for Mr. Shabdai Koder, who kindly allowed me to read it. De Paiva in his 'News of the Jews of Cochin' records the cordial welcome that he received from the Jews. He was royally entertained by David Raby of the White Jews and was feasted by the Jews in Ernakulam. These latter he records were 'Jews from Malabar who have two Synagogues there'. He notes that the White Jews were brown, but that this must have been due to the climate, for 'they are entirely separated from the Malabaries of rank because it is a great disgrace to intermarry with them. They do not eat of what the Malabaries kill, nor do they celebrate minyan in their company; whereas they observe in all ways the same rites and ceremonies as the others'. He was told that the 'Malabaries' (Black Jews) were descended from slaves and that they were mixed with Canaanites, 'Guerim and Ismaelim'. The White Jewesses were kept in seclusion but as a great favour he was allowed to see the two young daughters of David Raby, whom he records were 'Elegant, white and beautiful'. De Paiva records a few minor details in Jewish ritual in which those of Cochin differ from other Jews. Among these he mentions the fact that they enter the Synagogue bare-footed and that the women do not cover the head. De Paiva was shown the copper-plates and obtained a translation of the inscription. He also met an old lady and two men who said that they were descended from the last King of Cranganore, one Joseph Azar. He gave a list of the most important White Jew families, several of whom are still represented in Cochin, two of them (Zackay and Susany) are noted as having been among the first families of Cranganore. The name Raby has now become Roby, and Aleva has become Hellegua. The other Jews in 1686 were descendants in the second, third or fourth generation from men who had come from

Germany, Aleppo, Damascus, Spain, Constantinople, Shiraz (Persia), and Jerusalem. This again demonstrates the mixed origin of this Jewish Community. There is no basis for the assertion that they belong particularly to the tribe of Manasseh (Day).

The Jews enjoyed a period of prosperity under the Dutch and were received socially by the best Dutch families. In 1795 the British took Cochin, and although the Jews received favourable treatment their trade began to decline and was largely taken over by Mohammedan and Hindu merchants. In 1808 there was a revolt in Cochin and Travancore against the British. The first British Resident, Colonel Macauley, escaped from the insurgents and hid in Jewtown in the house of Naphtali Rattenberg until help was obtained. For this favour Rattenberg's property was given tax free to him and his heirs, and Macauley presented the Synagogue with silver lamps and two small silver crowns for the scrolls of the law.

PECULIAR CUSTOMS OF WHITE JEWS AND THEIR SIGNIFICANCE.¹

Although the White Jewish community in Cochin has been augmented by Jews coming from the west in the past four hundred years, they believe that these immigrants joined a group of Jews who had lived for centuries near Cranganore. The following customs which are peculiar to all the Jews of Cochin but unknown in Jewery elsewhere tend to uphold this tradition.

1. Their speech in the home is Malayalam, the vernacular speech of the Malabar Coast. In modern Jewish families in Bombay and Calcutta Arabic is the language of the old people. The young people everywhere speak English.

2. Certain of their marital customs show definite influence of the matriarchal customs of their Hindu neighbours. Alliances used to be arranged by the parents, but the modern young people make their own choice. On the wedding day the bride is given a small gold marriage token called *tali*, similar to that worn by local Hindu women but of distinctive design. The *tali* is on a thread which the girl's mother ties round her neck just before they go to the Synagogue. The bride walks to the Synagogue veiled accompanied by her mother and sisters. She is taken to a special seat at the west end of the Synagogue and a cylindrical white net is lowered so as to envelop her. She remains inside this covering until the end of the ceremony, but the groom is not placed under a canopy. He wears a hat, or traditional silk cap and has a prayer shawl (*zizit*) around his shoulders. During the ceremony the groom gives the bride a silver ring. Tradi-

¹ Ayyar's interesting account of the customs of the Cochin Jews needs revision.

tionally this should be made from a silver Hyderabad rupee of pre-British days, but these are now unobtainable. After the wedding the silver ring is replaced by a modern occidental type gold ring. Both the ring and the *tali* are taken from the widows at the husband's death as among Hindus. A wife goes to her mother's home for the birth of a child.

3. Until the present generation Jewesses always wore necklaces made of tiger's claws set in gold. These were supposed to ward off evil. Similar ornaments were worn by the Nair women as shown by the illustration given by Ayyar (1912).

4. A peculiar detail connected with the Synagogue in Cochin is the presence of two pulpits (Salem). One in the usual place the middle of the auditorium, and another up in the balcony on the east side in front of the grilled ladies gallery. The latter pulpit is characteristic of all the Synagogues in Cochin, the Law is read from it on the Sabbath and on special festivals. The high pulpit is supported from the ground by two large brass pillars which symbolize the great pillars of Solomon's temple, called Yakim and Boaz. On the eighth day of the feast of the Tabernacles the five scrolls of the Pentateuch of Moses are taken out of the Synagogue sprinkled with rose water and carried around the grounds by the young men in procession surrounded by crowds of youths jumping and chanting. This ceremony which is not performed elsewhere resembles the Hindu custom of taking their idols in procession. As de Paiva noted the Jews remove their shoes before entering the Synagogue, a universal custom among Indian communities. There are some Psalm tunes called 'Shingli' which are used by the White Jews and are supposed to have come from Cranganore.

5. The White Jews have no Rabbi, one of the elders leads the services and various members read the Law. Disputes are settled by the elders. Of late years the Black Jews have elected a special man to read the services who is paid a salary, but he is not a trained Rabbi. Each community has a Kosher butcher and an official circumciser. Since all the small boys attend a circumcision they have a real dread of the latter officer. Modern surgical methods are now employed by the White Jews, but in the past, infections, some of which were fatal, were not unknown.

6. Their ordinary diet consists of curries made chiefly of fish or chicken, highly spiced with chillies and eaten with rice. The food is still eaten with the fingers in the Indian manner except by a few of the best educated people.

7. Children are named after their grandparents. The first boy for the paternal grandfather and the next for the maternal grandfather. The first daughter for the paternal grandmother and the second for the maternal grandmother. It is considered unlucky for a boy to bear his father's given name while the father is alive. Sons sometimes take their father's name after his death.

Orthodox Jews are extremely conservative in every smallest detail of their ritual. If a group of men and women came from the West slightly before the advent of the Portuguese and started a separate community of White Jews, as the Black Jews aver, it is inconceivable that they would have adopted so many customs of the Malabar Jews, some of which are distinctly Indian. If this community held itself aloof from the members of the ancient Jewish colony they would cling all the more tenaciously to their own customs. The peculiar customs which are still common to both communities of Cochin Jews indicate that there has always been a group of Jews in Malabar which kept their racial strain free from Indian genes, and another section which did not. Any Jews who came from the west to settle permanently would associate with the former, and because they arrived a few at a time they would gradually be absorbed into the domiciled group and adopt their customs.

The reason why the Synagogue of the White Jews is called Parathesi, needs further investigation. 'Paradesi' is a Sanskrit word used to designate foreigners in Kerala (*para* = alien, *desi* = country). The Black Jews say that this name proves that the Whites were newcomers in the 16th century. It does not seem probable that any community would name their own Synagogue as 'Foreign'. I do not know when this name was first used but suggest that it was originally called the 'Paradisus' or Garden Synagogue because it was built on a part of the grounds of the Raja's palace. This was a common designation for park or garden in Europe in the 17th century and may have been employed by the Dutch to designate this Synagogue. Later the meaning was forgotten and the name was corrupted into 'paradesi', a word in common use locally.

THE SEROLOGICAL ATTACK ON THE RACE PROBLEM.

An anthropological study of the Cochin Jews who are interesting both as an isolated Semitic group, and also as a dying community (T. Menon) was desired. I am indebted to some prominent members of the community for much information, as well as for persuading their relatives to be measured and to give blood samples for grouping. These people have for the most part lived quiet lives in this out of the way corner of the world and they are very conservative and shy. With the help of Mr. S. S. Koder and of Mr. E. I. Hallegua I was able to take physical measurements of 22 of the White Jews, and to get blood from 50, which is half the community. After that we met with reluctance or opposition and the work had to be discontinued. My friends declared that it would not be possible to get adult Black Jews to submit to measuring, and they were very doubtful whether any of them would allow their blood to be grouped. Rumours and exaggeration are always rife in backward regions

and the Black Jews thought that I was going to discover from each man's blood whether he was a Jew or a convert. Finally with the help of Mr. A. B. Salem and Mr. Koder I was able to get blood from over a hundred of the Black Jews in Cochin and Ernakulam, chiefly from the children in the Hebrew School that is held in an upper room connected with each of their Synagogues.

I shall deal first with the seriological data. It is well-known that the incidence of the agglutinin B is higher in India than anywhere else (Snyder, Wiener). The proportions of the blood groups in Jewish communities vary in different countries (see Table II) but the percentage of B is never high. Gypsies after centuries of residence in Hungary still show a north Indian type of blood group distribution. Jews in India who have remained endogamous should show a Near Eastern or European type of blood group distribution.

Agglutinin tests were done by the open slide method (Wiener) with test sera of Groups A and B supplied by the King Institute of Medicine, Madras. These sera had been originally standardized with test sera from the Pasteur Institute, Paris, as well as with the sera supplied to me by the Haffkine Institute, Bombay, for agglutinin tests in Cochin in 1935 and 1936 (Macfarlane 1936). Blood grouping of the Jews was done late in April, 1936. My own blood, Group AB, was used each day as a check on the potency of the test sera. Two drops of each blood sample were mixed with 1 c.c. of normal saline and the tests were made immediately.

Because it was the hot season most of the White Jews were staying at Alwaye, where they have some fine houses on the banks of the Periyar River. I was able to visit them there and to get several blood samples which I tested on the spot. The data are shown in Table I.

The distribution of the blood groups in the three Jewish communities are completely dissimilar. The data for the Brown Jews can be disregarded because there are so few of them. These people are known and acknowledged to be racially mixed. The White Jews show a preponderance of persons in Group A. The reason for this is the very high degree of in-breeding. Almost any two White Jews possess at least one great-grandparent in common. The two major families, which frequently intermarry, are almost homozygous for the dominant gene A. A record of a Jewish family in America whose members all belonged to Group A is referred to by Parr (in Kappers). Table II shows that Group A is high in Jewish communities in the Near East. Great caution must be exercised in attempting to draw inferences of racial relationships from the data of small inbred groups. Aiyappan (1936) found the following percentages of blood groups among the Pre-Dravidian Paniyan Hillmen of South Malabar: O 20%, A 60.4%, B 7.6%, AB 10, which are also probably due to inbreeding. The White Jews and the Paniyans have nothing

else in common anthropographically but a high frequency of agglutininogen A. It may be noted that the frequency of gene B in the White Jews is of the same order as that in the Jews of the Near East (Table II). Among 166 Cochin Jews none was found in Group AB, probably another effect of inbreeding.

The Black or Malabar Jews show an even more unusually high percentage of Group O, which lacks both agglutinogens. Similar high percentages have only been recorded in isolated ancient races such as the Australians and Amerinds (Red Indians) who are in no way related to these Jews. It has already been shown (Macfarlane 1936) that there is a high percentage of Group O among the low caste and out-caste people of Ernakulam. The Black Jews have lived among these people for hundreds of years and there is every reason to believe that they have followed the old Hebrew customs of taking wives and concubines from the native inhabitants. These women most likely came from the servant, fisherman and labourer classes. The high class Hindu Sudras in this region, the Nairs, have always been matriarchal. It is very unlikely that Nair women would associate with the Jews. Likewise it is improbable that members of the ancient St. Thomas or Syrian Christians, would take service with the Jews. This leaves only such castes as the various artisans, Illuvass,¹ Valans, and the pre-Dravidian Pulayass, many of whom were slaves. In Table I blood group data from 260 persons belonging to all the low castes have been lumped together. These data were collected by Dr. P. Narayan Menon and myself at the General Hospital, Ernakulam, in 1935-36; they include those for 182 Illuvass and Pre-Dravidian Tribes which were published previously by castes (Macfarlane 1936). Since persons who type as Groups A and B may be heterozygous for the recessive gene R (of Group O) the frequency, r , of this gene is much higher than the percentage of Group O phenotypes. The chances that any low caste woman in Ernakulam will possess gene R are 7 for to 3 against.

The genes A, B, and R which give the blood groups are multiple allelomorphs. In a closed population when selection is absent 'under any system of mating the ratio of dominant to recessive allelomorphs remains constant' (Haldane). Among the White Jews the two largest and financially most favoured families belong to Group A. Members of other families tend to move away for better opportunities, thus causing an unconscious selection of Group A people. The children of non-Semitic concubines have been strictly segregated socially and there are no physical indications of admixture with Indian people. The Black Jews have probably descended from Semitic immigrants who from time to time took native converts as wives. This

¹ Also spelled Izhuva (Ayyar, Macfarlane), the simpler spelling is used here after Guha, Census of India, 1931, Volume I.

community therefore continually received more additions of the preponderant local gene R, and the percentage of Group O (genotype RR) increased.

Table II gives some data on blood groups of Jewish communities together with that for other people in the same country. It is interesting to note that German Jews show a lower percentage of Group B than Germans in Berlin where there is an underlying Slavic racial element. Poles were found to have a higher percentage of Group B than Polish Jews. The further East the residence of the Jewish community the higher the percentage of Group B, which is true of human groups as a whole.

Anthropologically and historically the Jews must be recognized, like the Aryans, as a cultural group of mixed racial strains, they are not a race in the biological sense. Kappers (1934) doubts that all the Jews in the world originated from Palestinian ancestors, and the Great Rabbi's instructions to the Black Jews of Cochin prove that this is not considered necessary.

Few people realize that it is not difficult for a Gentile woman to become a Jewess. It is more convenient for orthodox Jewesses if their personal servants be of the Jewish faith. There is an Indian girl in Cochin of Hindu parentage who was brought up from childhood as a Jewess and trained in all the Laws and ritual by Mr. Koder's grandmother. When she reached maturity there was nobody among the Jewish communities who would marry her; she therefore became a Roman Catholic convert and married an Indian Christian.

PHYSICAL ANTHROPOLOGY OF WHITE JEWS.

In 1935 measurements were made of thirteen female and nine male White Jews. It was not possible to obtain more and these meagre data are given because all the subjects are relatives, and as a family record some interesting points may be noted. They are evidently highly heterozygous and there is considerable variation among sibs in spite of generations of inbreeding, which is to be expected from the foregoing descriptions of the origins of the community. The cephalic indices show that some are strongly brachycephalic, while there is also a mesocephalic minority. Kappers found that the Jews of the Near East similarly showed two distinct groups. The Ashkenasim and Mosul Jews were brachycephalic from Subarean ancestors, and had large convex noses. The Sephardim and Turkish Jews were mesocephalic from an Asiatic-Mediterranean mixture.

The average cephalic index for these White Jews is 81.5. Ayyar found the average for the Black Jews to be 77.1, but does not mention how many were measured. The Jews are of a good height. They lead a sedentary life and many of them are plump and soft. They have a poor carriage and tend to walk with the pelvis swung forward and the feet splayed. They are rather

phlegmatic and do not gesticulate like the Jews in Europe. Some of them are blonde and a few red headed, others have black hair. The hair is seldom straight, though often fine, and several people have definitely kinky hair which may indicate distant North African affinities (Plates 5 and 6, figs. 24-34). There are no real blue eyes at present among them but several types of light hazel colour as well as grey. The ears tend to be large and several people have marked Darwin's points on their pinnæ. In spite of a soft diet most of the adults have good teeth, but some of the children suffer from a very severe type of dental caries which blackens the first teeth. Their skins vary from very fair to olive brown. It is generally believed that these White Jews are of an unhealthy waxen white, probably because of the exaggerated descriptions of Pierre Loti (Day, Loti). All white children in India lack rosy cheeks, if they live on the plains, and generally have a tired appearance, and this is true of the young Jews; they are not allowed out in the hot sun and some have a pallid complexion.

Exact data on morbid or pathological conditions have not yet been obtained. A majority of them suffer from infected tonsils and adenoids, and about fifty per cent. have bad eyes. There are some cases of diabetes. Hereditary mental derangement is present in two of the important families and is often manifested as manic depression in middle aged women. There is one feeble-minded young man and several moronic types. Fertility is rather low and some women have involuntary abortions.

On the other hand there are several very able members of the community, including a successful physician and other University graduates. Although most of them are land-owners they are not well off now because of the decline in prices of agricultural products. One of the White Jews was the first to introduce Japanese rickshaws into Cochin. One of the most go ahead families has a thriving retail business, and its members own and operate ferries and other types of transport on the harbour and backwaters. None of them has taken up banking or money lending.

Given a balanced diet, proper exercise and modern educational facilities, members of this community will undoubtedly rise to prominence.

CONCLUSIONS.

Evidence from blood groups, physical and cultural anthropology shows that if the claims which each Jewish community makes for itself be combined with the statements that the other Jewish community makes about them, the resulting account of their race and origins is probably near the truth.

The White Jews have preserved a Near Eastern and European Semitic strain and show no indications of admixture

with Malayalis. They are descended in the male line from Jewish immigrants from Arabia, North Africa and Europe who have arrived during the past 450 years. The fact that they have a few customs peculiar to themselves and to the Black Jews, some of which show local Hindu influence, demonstrates a cultural continuity with an ancient Indian Jewish community. They have probably descended from inhabitants of the old Jewish principality at Shingli (Cranganore) of a millenium ago, through female lines. All the descendants of these early Jewish settlers in the male lines have died out or moved away.

The Black Jews are the descendants of mixed Semitic and native Malayali ancestors. In the past converted and manumitted Indian slaves have been absorbed into this community. Their origin was no doubt in true Semites who came to Cranganore long ago. According to Rabbinical ruling they are true Jews if they follow all the Judaic ritual. Judaism is a culture and Jews come from many races.

It is quite possible that there exist in Kerala people of similar racial admixtures among Anglo-Indians, Black Jews, Hindus (matriarchal low castes), and Muslims.

TABLE I.

Blood Groups of Jews and of Low Castes in Cochin.

Caste.	Nos.	Percentages in Groups.				Frequencies.		
		O	A	B	AB	p	q	r
White Jews . .	50	18	62	20	0	42.7	14.8	42.5
Brown Jews	10	40	10	50	0	..	..	..
Black Jews . .	106	73.6	10.4	16	0	5.7	8.7	85.6
Misc. Low Castes . .	260	48.1	29.3	16.1	6.5	19.9	11.3	69.6

TABLE II.
Distribution of Blood Groups in Jewish and neighboring Communities.

Nationality.	Investigator.	Nos.	Percentages in Groups.				Frequencies.		
			O	A	B	AB	p	q	r
1. German Jews ..	Schiff and Ziegler	5621	42.1	41.1	11.9	4.9	26.4	8.8	64.8
2. Germans (Berlin) ..	Schiff	705	36.1	42.6	14.9	6.4	28.6	11.3	60.1
3. Dutch Jews ..	v. Herwerden	6679	42.6	39.4	13.4	4.5	25.2	9.4	65.3
4. Dutch ..	"	818	46.8	41.7	8.6	3.0	25.3	6	68.5
5. Polish Jews ..	Halber and Mydlarski	33.1	33.1	41.5	17.4	8	28.9	13.6	58
6. Poles ..	"	11488	32.5	37.6	20.9	9	28.2	11.1	62.6
7. Romanian Jews ..	Jonescu	1135	38.2	39	17.5	6.3	25.3	12.2	61.8
8. Romanians ..	"	2740	41.4	39.4	13.8	5.2	25.7	10.2	64.3
9. Macedonian Jews ..	Hirsfeld	500	38.8	33	23.2	5	21.3	15.3	62.3
10. Macedonian Turks ..	"	500	36.8	38	18.6	6.6	25.6	13.6	60.7
11. Syrian Jews ..	Parr	181	28.72	34.25	19.33	17.76	28.2	18.2	53.5
12. Syrian Moslems ..	"	1777	35	36.57	19.13	9.28	26	14.9	59.1
13. Aleppo Jews ..	Altouyan	1172	38	34	20	8	23.5	14.8	61.6

1 from Landsteiner, K. 'The Human Blood Groups', 1928.

2-10 from Wiener, A. S. 'Blood Groups and Blood Transfusion', 1935.

11-13 from Parr, L. W., in Kappers, C. U. A., 'An Introduction to the Anthropology of the Near East', 1934.

Measurements of Cochin White Jeus—9 males.

Subject No.	127	129	131	134	139	133	143	146	130
Age	..	..	..	..	17	7	36	25	42
Stature	170.7	26	23	166.4	179	125.4	175.7	172.5	166.2
Sitting height	83.2	96	86.7	84.8	83.3	58.2	88.2	82.7	80.3
Weight in kgms.	74.46	81.72	65.38	51.76	54.93	19.96	74.46	82.17	72.64
Thigh length	45	49	49.5	45.5	51.5	35.0	48.5	49.5	47
Tibia length	42	43	42.5	40	48	30.5	38.5	43.5	41.5
Max. head length	18.8	19.5	18.5	18.8	17.2	16.7	19.4	19	18.9
Max. head breadth	14.4	15.4	15.3	15.2	15	14	14.9	15.5	15
Min. frontal breadth	10.9	11.7	11.2	10.5	10.4	10.6	10	10.9	11.1
Max. bizygomatic breadth	12.5	13	12	11.4	10.5	9.8	9.9	10.8	12
Min. bizygomatic breadth	10.3	11.4	10.9	9.8	9.5	8.5	9.8	10.3	10.2
Bigonial breadth	5	5.2	6	5.7	5.4	..	5.5	5.6	6
Nasal length	3.4	3.8	3.4	3.3	3	..	3.5	3.5	3.2
Nasal breadth	6.5	7.2	7.4	7.5	6.7	6	7	7.4	7.3
Upper facial length	12.5	12	12.9	12.2	11.9	9.8	11.4	11.8	12.3
Total facial length	76.5	78.9	82.5	81	87.2	84	77	81.5	79.3
Length Breadth Index of head	68	73	56.6	58	55.5	..	63.6	62.5	53.3
Nasal Index	N	L.B.	N	D.B.	Blonde.	Blonde.	L.B.	N	N
Hair colour	..	..	..	..	..	..	..	..	..
Hair type	..	..	..	..	..	..	..	..	..
Eye colour	..	..	..	..	..	..	..	..	..
Ear length	..	..	..	..	..	..	..	..	..

* Decurrent lobes.

Legend: N = Black. L.B. = Light Brown. D.B. = Dark Brown. All measurements in cms.

Relationships.

Subject Nos. 127, 129 and 131, also 147 are sibs. No. 134 is a 2nd cousin and is father of Nos. 139 and (females) 128 and 132. No. 133 is cousin to the last three and nephew of all the others here mentioned. No. 143 is 2nd cousin of No. 134. No. 146 is cousin to 127 and sibs. 130 is a 3rd cousin of 134.

Note.—Leg measurements were taken over one layer of clothes and are therefore only approximate, to show bodily proportions. No. 139 is tall because of long leg bones.

TABLE IV.
Measurements of Cochin White Jews—13 females.

Subject No.	142	147+	148+	128	138	132	135	145	137	136	144	140	141
Age	36	25	36	23	18	10	18	17	13	19	14	20	50
Stature	149	152.3	160	157.3	150.5	142.5	150	150.4	147.4	145.7	146	163	162
Sitting height	70.4	77.4	76.4	79.3	77.3	65.2	71.5	70.7	71	73.3	72.2	79.2	82.5
Weight in kgs.	50.39	..	..	59	37.23	31.78	52.21	33.6	49.94	43.58	29.51	51.3	52.66
Thigh length	42.3	41.5	46.5	44	39.5	41.8	45	46	40.3	40.5	39	45.5	43
Tibia length	39	36	39	34.5	35.8	37	37	37.5	37.2	33.5	36	40.5	39.5
Max. head length	18.1	17.6	18.3	16.9	16.5	17.7	17.4	16.9	17.1	16.9	16.5	17.7	18.2
Max. head breadth	14.2	14.4	14	14.6	14.3	14.4	14.5	13.5	14.4	13	13.8	14.8	14.5
Min. frontal breadth	9.7	11.2	10.5	10.9	10	10.9	9.9	9.4	10.2	10.5	9.8	10.7	10.2
Max. bizygomatic breadth	9.9	12.6	11.6	11.5	10.4	11.1	10.6	9.8	11	10.9	10.2	11.6	11.3
Bigonial breadth	8.8	9.2	9.4	8.7	8.8	9.4	9.1	8.5	8.9	9.6	8.7	8.8	10.1
Nasal length	5.4	5.5	5.5	5.3	5.5	4.6	4.8	5.5	5.3	5.2	5.4	5.3	6.0
Nasal breadth	3.5	3.1	3.3	3.0	3.1	3.0	3.2	3.4	3.1	3.1	3.0	3.7	3.2
Upper facial length	6.7	6.2	6.8	7.0	6.8	6.4	6.2	6.8	7.0	6.7	7.0	7.0	8.2
Total facial length	10.3	11.0	11.7	11.1	11.0	10.5	11.3	11.1	12.2	10.8	10.7	11.6	12.1
Length breadth	78.2	81.8	76.5	86.3	86.6	81.5	83.3	80	84	77	83.5	83.5	79.8
Index of head	65	56.4	60	56.6	56.4	65	66.8	61.8	58.5	59.5	72.2	69.9	53.4
Nasal Index	L.B.	L.B.	D.B.	L.B.	L.B.	B.	L.B.	D.B.	L.B.	N.	N.	N.	D.B.
Hair colour	..	..	..	..	..	..	..	..	..	..	..	..	..
Hair type	wavy	kinky	wavy	kinky	wavy	wavy	wavy	curly	curly	wavy	kinky	wavy	wavy
Eye colour	L.B.	L.B.	D.B.	L.B.	Hazel	L.B.	D.B.	D.B.	B.	N.	D.B.	N.	grey
Ear length	6.0*	..	..	5.8	5.8	6.0	5.9	5.8	6.2	5.5	5.5	6.5	6.4

* = decurrent lobes.

+ = measured in 1936, all others in 1935.

Legend as Table III.

Relationships.

Subject No. 142 is sister to male No. 134 and to No. 148. 128 and 138, also 132 and 133 are nieces and nephew of 142 and 148.

No. 147 is sister of 127, 129 and 131 (table III).

Nos. 135 and 145 are sisters and third cousins to 134, etc., also to 127, etc.

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EXPLANATIONS TO PLATES 1 TO 6.

Plate 1.

- Fig. 1. Doorway of Parathesi Synagogue of White Jews. Bridge leads to old Hebrew School.
- Fig. 2. Levite in doorway of Parathesi Synagogue with large ceremonial horn (Shofár). Note almsbox in wall behind.
- Fig. 3. Brother and sister, aged 7 and 10. Nephew and niece of people in plates 5 and 6. Measured as Nos. 132 and 133.
- Fig. 4. Blonde White Jew girl and boy of mixed Brown Jews.
- Fig. 5. Young boys of the White Jews.

Plate 2.

- Fig. 6. Ancient copper-plate grants of the White Jews. Actual size of each plate 11×5 inches.
- Fig. 7. Reverse of third plate in fig. 6.

Plate 3.—Physical Types among the White Jews of Cochín.

- Fig. 8. Spinster aged 50. Measured as No. 141.
- Fig. 9. Aged 18, unmarried, sister of elder girl in fig. 11.
- Fig. 10. Bachelor, aged 18. Not measured.
- Fig. 11. Girls aged 14 and 17. Measured as Nos. 144 and 145. Elder is sister of fig. 9.
- Fig. 12. Aged 36. Married. Measured as No. 143.
- Fig. 13. Bachelor, aged 59. Swarthy complexion. Only 6-type nose in community.
- Fig. 14. Same as fig. 13 in traditional Sabbath dress. Cap and waistcoat of coloured silk.

Plate 4.—Physical Types among Cochín Black Jews.

- Figs. 15 and 16. Modern educated man.
- Fig. 17. A prominent member of the community. Semitic type.
- Fig. 18. Old schoolmaster of Synagogue Hebrew school.
- Fig. 19. Group of children. Fig. 20. Girls in every-day dress.

Plate 5.—Members of one Family of White Jews. Second cousins to people in Plate 6.

- Fig. 21. Spinster, aged 36. Sister of fig. 22, aunt of the rest. Measured as No. 142.
- Figs. 22-23. Scholar and University graduate, aged 48. Brother of fig. 21, father of other three. Measured as No. 134.
- Figs. 24-25. Wife of fig. 39, aged 23. Measured as No. 128. Hair frizzy.
- Figs. 26-27. Student, aged 17. Measured as No. 139.
- Fig. 28. Student, aged 18. Measured as No. 138.

Plate 6.—Three White Jews, Sibs (Brothers and Sister).

- Figs. 39-40. Husband of fig. 24, aged 26. Measured as No. 129.
- Figs. 31-32. Bachelor, aged 23. Measured as No. 131.
- Figs. 33-34. College student, aged 25. Unmarried. Measured as No. 147. Hair frizzy.

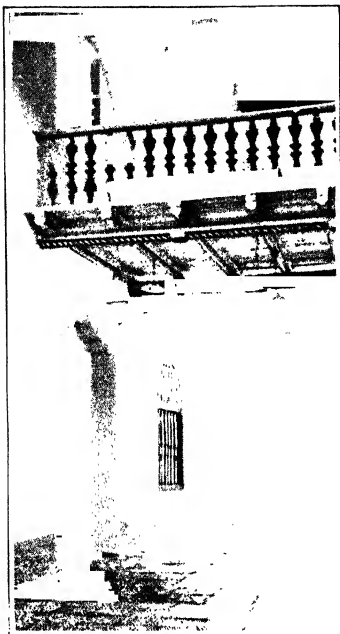


FIG. 1.



FIG. 2.

FIG. 1.—Doorway of Parathesi Synagogue of White Jews.

FIG. 2.—Levite of Parathesi Synagogue with large ceremonial horn.



FIG. 3. Brother and Sister.



FIG. 4. Blonde White Jew girl and boy of mixed Brown Jews.



FIG. 5. Young boys of the White Jews.

12345678910111213141516171819202122232425262728293031323334353637383940414243444546474849505152535455565758596061626364656667686970717273747576777879808182838485868788899091929394959697989910010110210310410510610710810911011111211311411511611711811912012112212312412512612712812913013113213313413513613713813914014114214314414514614714814915015115215315415515615715815916016116216316416516616716816917017117217317417517617717817918018118218318418518618718818919019119219319419519619719819920020120220320420520620720820921021121221321421521621721821922022122222322422522622722822923023123223323423523623723823924024124224324424524624724824925025125225325425525625725825926026126226326426526626726826927027127227327427527627727827928028128228328428528628728828929029129229329429529629729829930030130230330430530630730830931031131231331431531631731831932032132232332432532632732832933033133233333433533633733833934034134234334434534634734834935035135235335435535635735835936036136236336436536636736836937037137237337437537637737837938038138238338438538638738838939039139239339439539639739839940040140240340440540640740840941041141241341441541641741841942042142242342442542642742842943043143243343443543643743843944044144244344444544644744844945045145245345445545645745845946046146246346446546646746846947047147247347447547647747847948048148248348448548648748848949049149249349449549649749849950050150250350450550650750850951051151251351451551651751851952052152252352452552652752852953053153253353453553653753853954054154254354454554654754854955055155255355455555655755855956056156256356456556656756856957057157257357457557657757857958058158258358458558658758858959059159259359459559659759859960060160260360460560660760860961061161261361461561661761861962062162262362462562662762862963063163263363463563663763863964064164264364464564664764864965065165265365465565665765865966066166266366466566666766866967067167267367467567667767867968068168268368468568668768868969069169269369469569669769869970070170270370470570670770870971071171271371471571671771871972072172272372472572672772872973073173273373473573673773873974074174274374474574674774874975075175275375475575675775875976076176276376476576676776876977077177277377477577677777877978078178278378478578678778878979079179279379479579679779879980080180280380480580680780880981081181281381481581681781881982082182282382482582682782882983083183283383483583683783883984084184284384484584684784884985085185285385485585685785885986086186286386486586686786886987087187287387487587687787887988088188288388488588688788888989089189289389489589689789889990090190290390490590690790890991091191291391491591691791891992092192292392492592692792892993093193293393493593693793893994094194294394494594694794894995095195295395495595695795895996096196296396496596696796896997097197297397497597697797897998098198298398498598698798898999099199299399499599699799899910001001100210031004100510061007100810091010101110121013101410151016101710181019102010211022102310241025102610271028102910301031103210331034103510361037103810391040104110421043104410451046104710481049105010511052105310541055105610571058105910601061106210631064106510661067106810691070107110721073107410751076107710781079108010811082108310841085108610871088108910901091109210931094109510961097109810991100110111021103110411051106110711081109111011111112111311141115111611171118111911201121112211231124112511261127112811291130113111321133113411351136113711381139114011411142114311441145114611471148114911501151115211531154115511561157115811591160116111621163116411651166116711681169117011711172117311741175117611771178117911801181118211831184118511861187118811891190119111921193119411951196119711981199120012011202120312041205120612071208120912101211121212131214121512161217121812191220122112221223122412251226122712281229123012311232123312341235123612371238123912401241124212431244124512461247124812491250125112521253125412551256125712581259126012611262126312641265126612671268126912701271127212731274127512761277127812791280128112821283128412851286128712881289129012911292129312941295129612971298129913001301130213031304130513061307130813091310131113121313131413151316131713181319132013211322132313241325132613271328132913301331133213331334133513361337133813391340134113421343134413451346134713481349135013511352135313541355135613571358135913601361136213631364136513661367136813691370137113721373137413751376137713781379138013811382138313841385138613871388138913901391139213931394139513961397139813991400140114021403140414051406140714081409141014111412141314141415141614171418141914201421142214231424142514261427142814291430143114321433143414351436143714381439144014411442144314441445144614471448144914501451145214531454145514561457145814591460146114621463146414651466146714681469147014711472147314741475147614771478147914801481148214831484148514861487148814891490149114921493149414951496149714981499150015011502150315041505150615071508150915101511151215131514151515161517151815191520152115221523152415251526152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FIG. 8.
Spinster, aged 50.



FIG. 9.
Unmarried, aged 18.



FIG. 10.
Bachelor, aged 18.



FIG. 11.
Girls, aged 14
and 17.

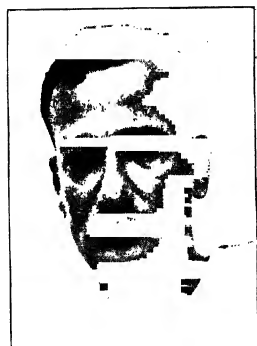


FIG. 12.
Married, aged 36.

FIG. 11.

FIG. 12.



FIG. 13.

FIG. 13. Bachelor, aged 59.

FIG. 14. Same as Fig. 13.



FIG. 14.

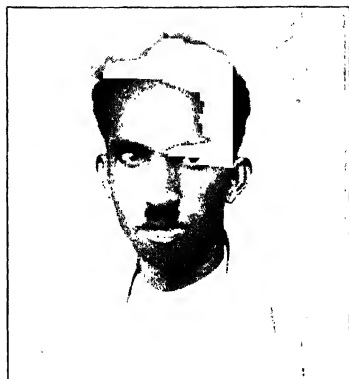


FIG. 15. [Figs. 15 and 16. Modern educated man.] FIG. 16.



FIG. 17.

FIG. 17. A prominent member of the community. Semitic type.

FIG. 18. Old school-master of Synagogue Hebrew School.



FIG. 18.



FIG. 19.

FIG. 19. Group of children.

FIG. 20. Girls in everyday dress.



FIG. 20.



FIG. 21. Spinster, aged 36.
[Sister of Fig. 22.]



FIG. 22.
[Figs. 22-23. University graduate, aged 48.]



FIG. 23.
[Figs. 22-23. University graduate, aged 48.]



FIG. 24. [Figs. 24-25. Wife of Fig. 29, aged 23. Hair frizzy.]



FIG. 25.



FIG. 26. [Figs. 26 and 27. Student, aged 17.]



FIG. 27.



FIG. 28. [Student, aged 18.]

MEMBERS OF ONE FAMILY OF WHITE JEWS. SECOND COUSINS TO PEOPLE IN PLATE 6.



FIG. 29.

[Figs. 29-30. Husband of Fig. 24, aged 26.]



FIG. 30.



FIG. 31.

[Figs. 31-32. Bachelor, aged 23.]



FIG. 32.



FIG. 33.

[Figs. 33-34. College student, unmarried, aged 25.]



FIG. 34.

THREE WHITE JEWS, SIBS (BROTHERS AND SISTER).

The Social Institutions of the Mālpāhāriās.

By SASANKA SEKHER SARKAR.

(Communicated by Dr. B. S. Guha.)

The Mālpāhāriās are an aboriginal tribe occupying the southern portion of the Rajmahal Hills in the district of Santal Perganas. They are very closely related to the Mālers, who occupy the northern part of the same district. In the census of 1931 the Mālpāhāriās are mentioned as speaking 'a western dialect of Bengali'¹ and the view has been expressed that the Mālers and the Mālpāhāriās belong to two different ethnic stocks.² It is true, of course, that a large number of the Mālpāhāriās have already entered the Hindu fold and some speak the dialect of Māto which is not akin to their present tongue, but this is not universal with all the Mālpāhāriās.³

SOCIAL GROUPS.

The Mālpāhāriās are divided into the following social groups which Risley called septs,⁴ namely: (1) Singh, (2) Kumār, (3) Āhri, (4) Derhi, (5) Grihi, (6) Mānjhi, (7) Pujhor, (8) Rāi, (9) Pātor, (10) Ghuns, (11) Dāloi. These social groups cannot be called clans, as they are neither strictly exogamous nor unilaterial kinship groups. They have no function in controlling marriages, which like the Mālers are reckoned by the prohibited degrees.⁵ Some of the above social groups appear to have their origins in different occupations. The social groups mentioned above, are not, however, met with among all the Mālpāhāriās but are true of the Mālpāhāriās of Dumka Sub-division wherefrom my data were mostly collected. I have also collected some social data from the Mālpāhāriās, who have settled down in the tea gardens of Darjeeling from a long time but they do not possess any of the above group names.

¹ *Census of India, 1931—Bihar and Orissa, Vol. VII, Pt. I, p. 233.*

² Ghosh, R. R.—Note on the Sauria or Māler Pāhāriās—*Census of India, Vol. I, Pt. III, B, p. 112.*

³ Sarkar, S.—The Census and the Mālpāhāriās, *Current Science*, January, 1934.

⁴ Risley—*Tribes and Castes of Bengal*, Calcutta, 1892, Vol. II, p. 99.

⁵ According to the prohibited degrees 'marriage with any person descended in a direct line from the same parents is universally forbidden'. Usually the formula for prohibited degrees is extended to the lines of paternal uncle, maternal uncle, paternal aunt, and maternal aunt. (Risley, *loc. cit.*, I, Introduction, xii.)

SOCIETY.

Among the Mālpāhārīās, social rules are not very strict. Genealogical records show that the marriage tie is loose. Mothers very often leave the house with their new paramours keeping their children behind. Usually a marriage union can be dissolved before the elders of the village by the woman merely, returning the bride-price and leaving all her children by her former husband with him. Babies feeding on their mother's breast are allowed to go temporarily with their mother but they have to come to their father when they are five years old. The father is to pay some maintenance allowance during the above period. In such cases the bride-price is not returned but kept in lieu of the maintenance allowance of the child.

The looseness of the family tie is due in the main to the excessive habit of alcoholism. Both the sexes indulge in drinking the palmyra palm toddy very largely; the country liquors are also used in spite of the vigilance of the excise people. Among the Santals and the Mālers unlicensed drinking is resorted to only on festive occasions but the habit of daily indulgence among the Mālpāhārīās may not improbably have produced a large number of barren women in every village. The average death-rate is above the normal and the birth-rate seems to be below that of the Mālers, though the women of the latter tribe are given to harder life than the Mālpāhārīā women. In some places, however, among both the Mālpāhārīās and the Mālers living on the plains there is a tendency of higher birth-rates due to more prosperous conditions of living.

CRIMES.

There is an increasing amount of crime among the Mālpāhārīās at the present time. In some places¹ the Police authorities have been compelled to enforce the Criminal Tribes Act on these people. This Act does not permit any person to leave his own village for any distant place without informing the police. These people are reported to be expert thieves. Burglary, larceny, and house-breaking are the most common offences.

GOVERNMENT.

The Mālpāhārīās have no government of their own. Where they have settled down in the Hindu villages they are counted as members of the village. In some isolated places where the village is entirely composed of the Mālpāhārīās there is a village headman of their own, but in the Dumka Subdivision it is hardly

¹ The personal observations of the author are from the village Āssānsol, Dumka.

seen, excepting in a few villages only. In every village, whether Hindu or Santal, there is a village headman, who is usually an elderly man of the village. It is not hereditary like the Mālers. The village Āssānsol, already referred to, though wholly a Mālpāhāriā village, has a Hindu headman. The Mālpāhāriās are totally deprived of all judicial powers concerning themselves. The function of the village headman is to keep the whereabouts of the villagers, to collect taxes, and to help the Government in such matters, as the arrest of an individual or his identification, etc.

KINSHIP SYSTEM.

The Mālpāhāriās at present use mostly the Bengali terms of kinship. The classificatory system is present to some extent. Father's younger brother and step-father (Kākā) are designated by the same term. The Māler classificatory system is extended to a wider group of relatives than the Mālpāhāriās. Among the Mālers, along with the above two relations, the same term is used to two other relatives, father's younger sister's husband, and mother's younger sister's husband. The single term for step-mother, and mother's younger sister (Mosi) among the Mālpāhāriās includes two more relatives, father's younger sister, and father's younger brother's wife among the Mālers. This change in the Mālpāhāriā kinship system has probably been due to their contact with the Bengalis.

Traces of dual organization,¹ as is evidenced from the kinship terms are met with in the Mālpāhāriā society. The Mālpāhāriās employ the same term for father's elder brother and mother's elder sister's husband (jethā) and their wives (jethi). The Mālers employ the same term for younger brother and mother's younger sister's husband and their wives.

The relationship terms used among the Mālpāhāriās are as follows :—

RELATIONSHIP TABLE.

Relationship Terms.	NAME OF VILLAGES.			
	Gāndo.	Āssānsol.	Fitkāriā.	Āmlāgarhi.
1. Father ..	Bubbā	Bāp	Dādā	Dādā
2. Step-father	Kākā	Sat-Bāp	Kākā	Kākā
3. F.E.B. ..	Jethā	Jethā	Jethe	Jethā
4. F.Y.B. ..	Kākā	Kākā	Kākā	Kākā
5. F.E.B.W.	Jethi	Jethāi	Jethāi	Jethi
6. F.Y.B.W.	Kāki	Kāki	Kāki	Kāki

¹ Ghurye, G. S.—Dual Organization in India, *Jour. Anth. Ins.*, Vol. LIII, p. 79.

RELATIONSHIP TABLE--(contd.)

Relationship Terms.	NAME OF VILLAGES.			
	Gāndo.	Āssānsol.	Fitkāriā.	Āmlāgarhi.
7. F.E.S. . .	Jethi	Pisī	Jethāi	Jethi
8. F.E.S.H.	Jethā	Pisā	Jethe	Jethā
9. F.Y.S. . .	Pisī	Pisī	Pisī or Nānā	Pisī
10. F.Y.S.H.	Pisā	Pisā	Pisā	Pisā
11. F.F. . .	Ājā	Ājā	Ājā	Ājā
12. F.F.F. . .	Dādā	Dādā	Dādā	Dādā
13. F.M. . .	Āyāh	Āyāh	Āyāh	Āaiāh
14. F.F.M. . .	....	Didi	Didi	Dādī
15. Mother . .	Mā	Māi	Māi	Māye
16. Step-mother	Mosi	Mosi	Mosi	Mosi
17. M.E.S. . .	Jethi	Jethi	Jethāi	Jethi
18. M.E.S.H.	Jethā	Jethe	....	Jethā
19. M.Y.S. . .	Mosi	Mosi	Mosi	Mosi
20. M.Y.S.H.	Mosā	Mosā	Mosā	Mosā
21. M.B. . .	Māmmā	Māmmā	Māmā	Māmā
22. M.B.W. . .	Māmmi	Māmmi	Māmi	Māmi
23. M.F. . .	Ājā	Ājā	Ājā	Ājā
24. M.M. . .	Āiāt	Āji	Didi	Āiāh
25. E.B. . .	Dādā	Dādā	Dādā	Dādā
26. E.B.W. . .	Bhāj	Bhouji	Bhaje	Bhoujai
27. Y.B. . .	By name	Chotā Bhāi	Bhāi	Bhāi
28. Y.B.W. . .	Bo	Boasin	Boasin	Buāsin
29. E.S. . .	Didi	Didi	Didi	Didi
30. E.S.H. . .	Bonui	Bonui	Bohonāi	Bohonāi
31. Y.S. . .	By name	Bāhin	Chotā Bahin	Chotā Bahin
32. Y.S.H. . .	Sālo	Parān	Parān	Parānas
33. Wife . .	By the name of the child.	Bohu	Mahargirthān	Girthān
34. W.E.B. . .	Oisāhāmāri	Parān	Parān	Parānās
35. W.E.B.W.	Didi	Sarojin	Sarojin	Didi
36. W.Y.B. . .	Bhāi	Sālā	Sāyo	Sāyo
37. W.Y.B.W.	Buāsin	Sarojin	Sarojin	Bāhin
38. W.E.S. . .	Bhinsār	Jethsās	Bahinsās	Bahinsās
39. W.E.S.H.	Baisārhu	Sārhu	Sārhu Bhāi	Bhāi
40. W.Y.S. . .	Sāli	Sāli	Sāuii	Sāuii
41. Y.S.H. . .	Sārobhāi	Sārubhāi	Chotā Sārhu	Sārhu Bhāi
42. W.F. . .	Sāsūr	Sāsūr	Sāsūr	Sāsūr
43. W.M. . .	Sās	Sās	Sās	Sās
44. Husband	By the name of the child.	By the name of the child.	Maharmarad	Murad
45. H.E.B. . .	Jethāso	Jethāso	Bhesur	Bhāsūr
46. H.E.B.W.	Didi	Bhājoi	Didi	Didi
47. H.Y.B. . .	Gutin	Der	Chotā Dewar	Dewār
48. H.Y.B.W.	Gutin	Gutin	Chotā Gutin	Bātīn
49. H.E.S. . .	Sās	Jethsās	Barā Bahin	Didi
50. H.E.S.H.	Bhāi	Sārhu	Barā Bahanāi.	Dādā
51. H.Y.S. . .	Nanad	Nanad	Chotā Bahin	Nanad
52. H.Y.S.H.	Bāi	Nanādasi	Bahin Jāmāi	Bhāi
53. H.F.	Sasur	Sasur	Sasur	Sasur

RELATIONSHIP TABLE—(concl'd.)

Relationship Terms.	NAME OF VILLAGES.			
	Gāndo.	Āssānsol.	Fitkāriā.	Āmlāgarhi.
54. H.M. ..	Sās	Sās	Sās	Sās
55. Son ..	Nānuu	Betā	Maharbetā	Betā
56. Z.W. ..	Bohu	Putho	Māhār Bohu	Bohu
57. Z.Z. ..	Nāti	Nāti	Nāti	Nāti
58. Z.Z.W. ..	Nātin	Nātin Putho	Nātin	Nātini
59. Z.D. ..	Nātni	Nātni	Nātni	Nātni
60. Z.D.H. ..	Nāti	Nāti	Nāti	Nāti
61. Z.W.F. ..	Samdi	Samdi	Samdi	Samdi
62. Z.W.M. ..	Samdin	Samdin	Samdin	Samdin
63. Daughter	Nānin	Beti	Maharbeti	Beti
64. D.H. ..	Jowai	Mahar Jewai	Mahar Jewai	Jewāi
65. D.Z. ..	Nāti	Nāti	Nāti	Nāti
66. D.Z.W. ..	Nātin	Nātin Bohu	Nātin	Nātin
67. D.D. ..	Nātni	Nātni	Nātni	Nātni
68. D.D.H. ..	Nāti	Nātin Jewai	Nāti	Nāti
69. D.H.F. ..	Samdhi	Samdhi	Samdhi	Samdhi
70. D.H.M. ..	Samdhin	Samdhin	Samdhin	Samdhin

F = Father.

Y = Younger.

M = Mother.

W = Wife.

B = Brother.

H = Husband.

S = Sister.

D = Daughter.

E = Elder.

Z = Son.

BIRTH.

A separate hut is usually erected for the purpose of delivery of a Mālpāhāriā woman. The Dom or Hāri midwives are called in to attend on the pregnant woman. The number of days for which she is confined to the lying-in hut varies in different places. The Mālpāhāriās of Keroduli observe three weeks as the period of confinement and three baths are taken after the end of each week. In Titriā, a Mālpāhāriā village in Pakur Subdivision only seven days are observed in the lying-in hut but the woman is officially declared clean after twenty-one days. In Dumka, only nine days are considered necessary in the lying-in hut but the woman is officially declared clean after six months. During these periods meals cooked by her are tabooed.

NAME-GIVING.

Among the Mālpāhāriās the child is named on the day when the mother leaves the lying-in hut, i.e. after nine days in Dumka,

seven days in Pakur, and twenty-one days in Keroduli.¹ The Santal custom of naming the baby after the name of the grandfather is met with in Keroduli area only. Names are also given after the name of the father's younger brother, father's elder brother, and mother's younger sister.

The Mālpāhārīās of Dumka Subdivision have adopted a second ceremony known as giving the first rice to the mouth of the baby from the Bengalis, and the mother is declared clean after this ceremony is over and here the mother is to cook this meal for the invited guests. The first rice² is given to the baby by its father and when the latter is absent the father's brother offers it.

The Mālpāhārīās are in the habits of suppressing their original names when they come out to the tea gardens or elsewhere for the purposes of employment. This fact was revealed to the author when he was taking anthropometric measurements of this tribe in Darjeeling tea gardens.

MARRIAGE.

Among the Mālpāhārīās, marriage is always arranged by the elders of the bride and the bridegroom. The consents of the boy and the girl are very rarely taken. There is, like the Mālers, a professional matchmaker known as Sithudār and his function consists in the negotiations only. Like the Mālers, he does not take part in the actual ceremony at all among these people. The Mālpāhārīās, dwelling on the Pakur-Godda area, still retain the Māler influence because of close contiguity and like the Mālers, practise adult marriage. The Mālpāhārīās appear to have adopted the custom of child marriage after low castes Bengalis. Both the sexes are married between the ages of eight and twelve and this age limit strictly applies to Dumka Subdivision.

The Mālpāhārīās do not marry within kinship groups. Marriage, as stated already, is controlled by the prohibited degrees of relationship. Polygamy is in vogue among the rich. Levirate is recognized. The latter custom is not in vogue among the Bengalis and the Mālpāhārīās are now learning to disapprove of it after the latter.

The bride-price among these people varies from Rs.12 to 20. The actual marriage takes place when the guardians of the bride and the bridegroom have settled the dowry, bride-

¹ The village Keroduli is situated on the Pakur-Godda line, i.e. the present border line of the Māler and the Mālpāhārīā cultures. The area to the north of this line is occupied by the Mālers and the south by the Mālpāhārīās.

² Among the Hindus the first rice is given to the mouth of the baby by its mother's brother : the latter being absent father's brother is selected.

price, etc. The ceremony is held during the day. On the appointed day, the bridegroom party starts for the bride's house with the bride-price and necessary presents, the latter consisting of a bangle, usually of zinc, and a turban. These are offered immediately when the bride is presented for the actual ceremony. The bangle is presented to the bride's eldest sister, and the turban to the youngest brother. Then the bride-price is paid and the ceremony begins. The head of the bride is besmeared with oil and vermilion by the bridegroom. The Derhi of the bride's village functions as the priest. He then places the bride's hand on the groom's hand and asks him to be loving and kind to her. During the ceremony the bride and the groom sits facing each other. The Derhi of the bridegroom's village worships Māṛo¹ before the party sets out for the bride's house. After the ceremony, a huge feast is given. Rice-beer and meat form the most important items. The bride and the bridegroom are then left in a separate room and meals are offered to them in one plate only. This plate is given as a dowry to the bride by her father.

The bride comes along with the bridegroom's party on the same day. Then after eight days the bridegroom brings her to his father-in-law's house. This is known among the Mālpāhāriās as 'Ātrāngalā' and this term is also used by both the Mālers and the Mālpāhāriās of the Pakur-Godda area. The bride stops in her father's house only for a day and then she comes with her husband as a permanent inmate of his house.

DEATH AND FUNERAL RITES.

The dead is either buried or burnt. In Pakur, like the Mālers, the dead is always buried with the head to the west. In Dumka both the methods of disposing of the dead are practised. In Gāndo, the Mālpāhāriā *Rājā* of the Kumar clan always buries the dead. Here the head is placed towards the north. The choice between cremation and burial depends upon the pecuniary status of the dead man's relatives. The personal belongings are always given away with the departed. The dead man's relatives are prohibited from taking salt, fish and meat for nine days. On the 10th day all the relatives shave and bathe. The chief mourner of the deceased (eldest son in the case of the parents, and oldest relatives in case of others) performs the *srādh* ceremony. This also has been adopted from the Bengalis and is met with among the Mālpāhāriās of Dumka. Then the chief mourner comes with his relatives to the funeral place and offers rice, rice-beer, a few maize grains, and some rice flour. All the relatives are to offer some food to the departed

¹ No such deity is worshipped among the Mālers during marriage.

and this is done after the chief mourner has finished his offerings. Then follows the usual feast. The offering of a few maize grains along with other food materials is the only surviving trait of maize, forming such an important factor in all the ceremonies in the northern hills among the Mālers and to some extent among the Mālpāhāriās of Pakur and Pakur-Godda area.

The Mālpāhāriās keep a separate piece of land for funeral purposes. This is situated outside the village. At present, most of these Mālpāhāriās prefer to burn the dead. After the body is burnt a piece of bone is thrown into a deep tank where water is present throughout the whole season. The Mālpāhāriās of the Pakur-Godda area always burn the dead with head to the west. The custom of throwing a bit of bone in the water is not in vogue here. The latter custom is not met with among the Mālers and seems to have been adopted from the Hindus.

Notes on rural customs of Dinajpur District.

By KARUNAKETAN SEN.

These are more or less disjointed notes on some customs I happened to observe in the interior of the Dinajpur District last winter. I did not have the time or opportunity to take up a systematic social study. But even so, it may be worth while to keep record of those customs that I happened to observe. The notes must be preceded by a short account of the area and the population.

The Area.—The area is the northern and central part of the Dinajpur District in North Bengal lying near about the Eastern Bengal Railway extension to Ruha. It is almost an agricultural area. The soil towards the north is not too good and is sandy. There is a lot of jungle and scrub, and the country looks as if it has not been reclaimed from the forest so very long ago. The main crops are paddy, jute, sugar-cane and mustard. Towards the more central part of the district, the soil improves and good paddy is grown. This part looks older. Almost every village has large and old tanks with high embankments round with occasional depressions in them, which serve as an outlet for the overflow during the rains. Ruins of old brick-built houses and old stone images are also found in many villages. The central area looks as if it was once better populated and more prosperous than now.

The Population.—The population is divided between Hindus and Muhammedans. The Hindus mostly belong to the caste called Rajbangshis. The controversy whether the Muhammedans are Rajbangshi converts has not been settled. There are some men from North India and a fair sprinkling of Santals and Oraons. Among the Hindus I found an interesting community towards the extreme north of the area. These are landlords and *jotedars*, who have emigrated from Rajputana through Bihar and are still restricting their marriage relations to the emigrant communities here and elsewhere in Bengal and parts of Bihar.

An interesting movement has taken place among the Rajbangshis, led by late Rai Sahib Panchanan Barman, M.B.E., of Rangpur. They are now calling themselves Kshatriyas, adopting the sacred thread and the style of Barman or Singha. The effects of the movement are more apparent near the towns and the more central area of the district. They are asking for special representation in the legislatures and local bodies and a reserved percentage of the smaller government jobs. Socially, it has led to queer results—especially in the position of women.

The women of the caste used to have some freedom of movement, worked in the fields and visited markets and *hats*, the age of marriage used to be comparatively high, and the remarriage of widows was socially approved. All this is changing. Women now want bullock-carts for moving about, the age of marriage is getting lower and though the remarriage of widows is still practised sometimes, it has lost its social sanction. Where it has not objectively altered the customs it has at least changed the social ideal. In the matter of dress also there have been changes. The dress of women formerly used to be, and in the interior still is, a piece of cloth about 4½ feet by 3 with very wide borders, tied round the chest below the arms and reaching down to the knee. In the cold weather they wear a thick cotton wrapper round the upper part of the body. The lower garment is woven locally and sometimes consists of two smaller pieces sewn together. The cotton wrappers are made in Bombay. A brick colour with a black border is the most popular variety in wrappers. But near the towns the women are now using the large sari more usual in other parts of Bengal. The movement has given the community greater self-respect and some material advantages but its general effect seems to me to be anti-liberal and against social progress. It would be interesting to make a closer study of the situation for it is typical of movements among the so-called depressed classes, when they begin to imitate what are supposed to be the ways of the higher castes.

Industries.—The economic activities of the population are almost entirely agricultural. There are a few other industries like pottery, hand-loom weaving and making rough mats from jute. In a few villages silk-worms are reared on a small scale by women and rough silk (*Endi*) is produced and woven. The only indication of industrialism is a sugar-mill at Setabganj. But its labour is drawn from the emigrant up-country population. The mill affects local agricultural production only within a radius of about six miles. Beyond that radius the cultivators find transport charges too heavy to make it profitable for them to sell their sugar-cane crop to the mill. The crop is therefore utilized for making molasses or *gur* locally.

After this introduction we can proceed to a description of some of the local village customs. I found religious and quasi-religious customs of the Hindu population the most interesting.

Of all deities the goddess Kali is the most important for this part. In every village there are huts dedicated to her and used as temples. In some of them one finds an image of the goddess Kali—in others only a circular mound of earth, which is painted with vermilion and symbolizes the deity. In some a hollow drum of cork is kept hanging over the mound. This cylinder of pith is painted over in red and black ink with figures of the goddess Kali in the centre and other deities and fairies on either side. There is an omen attached to the cylinder. The believer comes

in the morning and stands in front of the hut. If he happens to face the image of Kali on the pith cylinder, it will be a good day for him. But if the cylinder has turned round and he happens to face any of the other images it will be a bad day. There are one or two Kali temples which have a tradition of human sacrifice in the past. In one village I found a local tradition of a leopard being captured and sacrificed to the goddess not so very long ago.

Besides the huts which are used as temples to Kali there are other places—mostly a plantain grove by the way-side—which are sacred to Kali in another form—Smasana-Kali or Masan-Kali, in the local dialect, that is Kali of the cremation ground. Many of these have no images on them, and some of them are not quite obviously connected to any cremation ground. No formal worship with priests is held at these places—but people stick effigies of pith at these places. These effigies are sold in the local *hats*, and are connected with magical practices. They represent fairies or demons and sometimes Kali herself. In these effigies the goddess is represented as having wings and riding on horse-back. The protruding tongue and the general aspect show her to be Kali.

Images are also made of other deities who are usually worshipped without an image in most parts of Bengal. I found huts with images of Manasa, the snake-goddess, riding on a donkey and with two cobras by her side. This hut was again a sort of permanent temple. In another village—not in Dinajpur but in the immediately adjoining part of the Purnea District in Bihar—I found a similar temple to Lakshmi, the goddess of wealth. Elsewhere in Bengal an image of Lakshmi is very rarely found. This image was quite big and was rather like the usual group of figures made for the worship of Durga. There were the images of Lakshmi and Saraswati, the goddess of learning, and those of Kartikeya and Ganesha, but the central figure of Durga was missing.

Many of the villages have a village deity also—with or without a temple. The local term for these deities is just 'grāma' or village. There is usually a place in the village—a grove of trees or a hut—sacred to the village deity. In one village I found an old stone image of Surya or the Sun-god worshipped as the village deity. The villagers believed the image to be that of a goddess—'Dulai-Chandi'. This village had another deity 'Sarba-mangalā' who had an image and a big hut and was apparently more important than the village deity. In many of the villages some rent-free land had been endowed by the landlord for the village deity or some other. In most cases the Mandal of the village had charge of these lands—but of this later on.

Another deity was important in many villages. This is 'Bisha-hari', another god who protected people from snakes. There was no image, but a hut sacred to him and surrounded by

a line of plantain trees. Though such a hut was found almost in every village and worship of the god was apparently an important annual event, the villagers seemed a little ashamed of this deity and told me that it was the children who worshipped him. I found this attitude rather difficult to understand. But probably the explanation would have come, if I could find out more about the cult.

In most villages one found dried up bamboos from which were hanging broken wicker-work baskets and old shoes. These were sacred to a village goddess who cured stomach-aches of children.

About Muhammedans, I did not find many brick-built mosques. But in many villages there were huts which were places of worship and were called 'Jumma-ghars'. Where there were more than one in a village, the local Muhammedan population was very often divided into factions, each attached to one of the Jumma-ghars. There was a custom of having a picnic out in the open on Idduzzoha day. In almost every village there was one or more tombs of Muhammedan saints and rent-free lands or 'Pir-pāls' attached to each. One or more families enjoy these rent-free lands as Shebaites (the Hindu term is locally used for the Muhammedan shrines also) of the Pir. Their duty consists of looking after the tomb and lighting them on festive occasions. In most cases there is no clear tradition as to the identity of the village Pir nor about the origin of the Pir-pāl tenancies.

The whole question of these rent-free lands, whether attached to a Hindu temple or a Muhammedan shrine, demands more careful investigation. In many cases part of the produce from these lands are utilized for the purpose of worship—but the Shebaites also derive some personal benefit from them. In some cases one would find a Hindu family in charge of a Pir-pāl land or a Muhammedan family in charge of a rent-free tenure endowed to a Hindu deity. In one village I found the population entirely Muhammedan. But the village had been given some rent-free lands endowed in favour of a Hindu deity. This was a fairly big and beautiful stone image of Vishnu-Nārāyana which was to be seen near an old tank in the middle of a jungle. The Muhammedan population apparently held the image in reverence, looked after the place and utilized the produce of the endowed lands in engaging a Brahmin priest once a year for the worship of the deity. There is a tradition that there was another image near the present one. The present image has one of its arms broken. The villagers said that one night twenty or thirty years ago, the two gods had a fight—one of them fell into the tank and disappeared and the other's arm was broken. The present image is placed against a tree and one can easily move it. But the villagers believe that if one came with the intention of taking it away or stealing it, the image would become too heavy

to be moved at all. Similar beliefs are apparently common about many deities—especially about Vishnu images. The Maharajah of Dinajpur has a temple near the outskirts of Thakurgaon town. It is said that a former Maharajah wanted to take the image to Dinajpur and place it in a temple there, and he made a canal from Dinajpur to Thakurgaon (the canal still exists). But when the boats arrived, the image became too heavy and refused to be moved. And it has continued to be at Thakurgaon.

In connection with the question of rent-free lands the system of Mandal-ship also requires a more careful examination. Unlike many other areas in Bengal Mandals or village headmen are still to be found in many villages of this area. The selection of a headman shows varied types of compromise between a hereditary principle, election by the villagers themselves and appointment by the landlord. In many cases the post of the Mandal is attached to a particular family. But if the son of the old Mandal is too young, or incompetent or unwilling to accept the responsibility of making collections for the landlord, the post is given to some one else either from the same family or another. The landlord very often appoints the new Mandal but with the consent of the villagers. Benefit of the free lands endowed to the village deities is often an incident to Mandal-ship. In some cases the Mandal is himself responsible for utilizing part of the income from these lands for the worship of the deities and the other part goes to himself. In other cases the Mandal hands over the collections to the landlord, who is responsible for the worship. In some cases the system almost amounts to an ownership of the whole village as a community and management by the Mandal on their behalf. It is these cases and the principle according to which the Mandal is appointed—hereditary, elective or by nomination by the landlord—that seems worth fuller investigation to me.

Apart from definitely religious customs, I happened to come across some magical customs and beliefs also. Some of these are for curing the sick and exorcising evil spirits. A number of Muhammedans practise as experts in these magical ceremonies and are called 'Mahats'. I had no opportunity of observing the details of their magical rites. But I came to learn that skulls of cattle are an important magical object. In many village paths I came across these skulls, anointed with vermilion and scorched by lighting a fire of faggots or jute sticks. Many of the magical practices are associated with agriculture—as is natural with a rural population. I found clay models of the human figure or a human head placed in many fields. I first thought that they were scarecrows but was told that these figures were supposed to keep evil spirits away. A fertility rite is very obvious. On the day of the worship of Lakshmi, the goddess of wealth and plenty, a banana leaf is tied round fruit

trees. This is done both by Hindus and Muhammedans. I could scarcely find a mango tree or a jack-fruit tree which did not have this girdle of banana leaf. I was also told about a rain-foretelling magic. On the morning of Sripanchami, the day on which the goddess of learning is worshipped, the peasant goes into the field and chooses a *kachu* plant, ties together twelve leaves of the plant and calls them after the names of the twelve months. The next morning he goes and sees in which of the leaves there are dew drops and he knows that there will be rain in the corresponding months of the year. There are also a number of magical rites associated with the homestead. Many houses are found surrounded by bamboo poles with a white flag on top—again to preserve the house from evil spirits. When a villager decides to build a house and chooses a site, he puts four bamboo posts at the four corners and ties them with string and then he places some cooked rice in an earthen-ware vessel on the centre of the plot. If a bird or an animal comes for the rice soon, it is a good sign and the plot is all right for a house. Otherwise, he knows that there is some thing wrong with it and decides not to build his house there. Even after he has built a house, if there are a number of deaths or cases of sickness closely following each other, he decides that evil spirits have taken possession of the place—he abandons his homestead and moves over to another—either in another part of the same village or in a neighbouring one. One is struck by the number of these abandoned homesteads. And it is for this reason that one does not find that attachment to the homestead which is such a common feature of village life elsewhere in Bengal. I came across this when I had to talk to the villagers about the possibilities of consolidation of holdings by voluntary exchange. Some of them pointed out that they might to have to abandon their house and move over to a new place and then, a consolidated holding near their old homestead would not be of much use to them.

These are jottings of unsystematic observation. But the area is in a remote corner of Bengal—the population is still primitive to a certain extent but in a state of flux. There may therefore be some features which are not commonly found elsewhere. These notes may therefore help some one who would like to enter into a comparative study of village customs of different parts or one who would take up a more systematic study of some of the questions this paper has barely indicated.

A Sculptured Lintel of Gupta Date from Sārnāth.

By S. N. CHAKRAVARTI.

During the excavations at *Sārnāth* a door lintel (length 16' ; height 1' 10" ; thickness 1' 3½") with reliefs on its lower face was discovered in the area to the north-east of the *Main Shrine*. The reliefs were first described by Sir John Marshall and Professor Sten Konow¹ and subsequently by Paṇḍit Daya Ram Sahni.²

The face on which the reliefs are found is divided into six panels, separated by representations of *vihāras*. The latter are of two kinds, alternating with each other. The first is the top of a *vihāra* with a lion's head flanked by two lions facing on opposite directions or two *Jambhala* figures ; below, a group of three musicians. The other kind represents the top of a *vihāra* with *āmalaka* flanked by leogryphs facing on opposite directions ; below, standing female between a pair of pitchers or standing female giving something to a child squatting on either side. The lower portion of the lintel exhibits lines of dentils and floral scroll.

Of the six panels, the one at the proper right extremity represents *Jambhala* with *bijapūraka* in his right hand and a money purse in his left hand, sitting in easy posture, with two female attendants, the one on the right with a bowl on the left hand and a *chāmara* in the right hand and the other on the left with a *chāmara* in the right hand and a harp (?) in the left hand. The other panel at the left extremity also exhibits *Jambhala* with the same attributes in his hand. But to his proper right is an amorous couple.

In the intervening four panels are, beginning from the proper right :

1. An ascetic whose right hand is being cut off by a man, while one woman remains kneeling down before him and another stands behind, both trying to dissuade him from the cruel act. His right hand is a little extended towards his aggressor in the gesture of delivering a sermon. The latter is shown wearing a diadem, a necklace of beads, and bracelets ; with a *churi*-bearer behind him ; with twisted upper garment hanging round his loins.

2. A group of five female figures, the middle or main figure dancing to the accompaniment of musical instruments played on by the rest.

¹ Annual Report of the Archæological Survey of India for 1907-08, pp. 70ff.

² Catalogue of the Museum of Archæology at Sārnāth, pp. 233ff., also see pp. 26-27 ; Guide to the Buddhist Ruins at Sārnāth, pp. 12, 49.

3. The same group of musicians as shown in the second panel. But the music has stopped.

4. An ascetic seated cross-legged ; worshippers five in number, on both sides. This ascetic perhaps is the ascetic in the first panel and the five worshippers perhaps are the five female musicians in the second and third panels.

Now, what may these four panels represent ? In making out the interrelation of the four panels one must start from the second and proceed to the third and the fourth and then to the first panel to the proper right. According to Marshall and Konow the scene in the first panel represents the Jātaka of *Kshāntivādi* and that in the fourth panel also refers to the same Jātaka. Evidently, the second and third panels, in the opinion of these two scholars, bear no relation to the other two panels. It has, however, been pointed out by Paṇḍit Daya Ram Sahni that the four panels bear relation to one another and that these illustrate the *Khantivādi-Jātaka*.

We possess, however, two versions of the above Jātaka in Sanskrit and Pāli. In the Sanskrit version it bears the title of *Kshāntivādi*,¹ which forms one of the Jātakas in the *Jātaka-mālā*, a Sanskrit rendering of only thirty-four Jātakas ascribed to *Ārya Śūra*. In the Pāli version it bears the title of *Khantivādi*.²

The question is—which of the two versions fits in with the illustration in the four panels ? The Jātaka in Sanskrit may be narrated here to our advantage, noting where it differs from the corresponding Jātaka in Pāli.

The Bodhisattva was an ascetic who had forsaken the world. As he was in the habit of always preaching forbearance and teaching the Law from that point of view people called him *Kshāntivādīn*. He dwelt in a forest. One hot season the king of that country seized with a great longing to play in the water went to that forest with his harem. The women began dancing and singing to the accompaniment of musical instruments. The king, as he was tired with incessant playing and drunkenness, laid himself down on his precious royal couch in a beautiful arbour and fell asleep. The women, when they perceived that the king was asleep, left him behind and rambled about jovially in the forest. In course of their rambling through the forest they saw the ascetic *Kshāntivādīn* who was seated cross-legged under a tree in an arbour. They went to him in a humble attitude and sat down respectfully in a circle round him. The ascetic began preaching the Law to them. Meanwhile the king awoke and desired to continue his amorous sport. Having been informed by the female attendants that the women went to

¹ No. XXVIII of the *Jātaka-mālā* (ed. Kern), pp. 181-192 ; Transl. (Speyer), pp. 253-268.

² The *Jātaka* (ed. Fausboll), Vol. III, pp. 39-43 ; Transl. (ed. Cowell), Vol. III, pp. 26-29.

the other parts of the forest, the king accompanied by his female warriors marched through the forest after them. When he saw the ascetic preaching to his women he grew angry and rushed on him with the determination of striking him. The women, with anxious looks expressive of their trouble and consternation, rose from the earth and took leave of the ascetic. They went to meet the king and stood near him with folded hands. But they perceiving that the king was marching with a sword in the direction of the ascetic they placed themselves in his way, and surrounding him entreated him not to strike the ascetic. But the king did not listen to them. The ascetic preached the Law to him. But the king was in such a fit of wrath that he directed his sharp sword to the right hand of the ascetic, which was a little extended towards him, and severed it from his arm. He then cut off his both arms, his ears and nose, and his feet, one after the other. And as he was leaving the harbour after performing the cruel deed and at the very moment he passed out of the range of the ascetic's vision, he was swallowed up by earth.

In the corresponding Jātaka in Pāli we are told that the king, when he heard that his women were gone away and were sitting in attendance on a certain ascetic, in a rage seized his sword and went off in haste to punish the ascetic. Then those of the women that were most in favour, when they saw the king coming in a rage, went and took the sword from the king's hand and pacified him. Then the king came and stood by the ascetic and asked him what doctrine he was preaching. When the ascetic told him that he was preaching the doctrine of patience ('the not being angry when men abuse you and strike you and revile you'), the king summoned his executioner with a view to test the reality of the ascetic's patience. At the command of the king the executioner cut off the ascetic's hands, feet, nose and ears, one after the other. When the ascetic persisted in declaring that his patience was deep-seated within his heart, the king himself struck the ascetic above his heart with his foot. As a result of his sinful act the king was swallowed up by earth.

If we compare the above two versions of the story, it will be noticed that the story represented in the relief bears closer resemblance to the Sanskrit version than the Pāli one. Because the aggressor in the first panel is undoubtedly the King, not his executioner. The executioner (*choraghātaka*) on duty is described in the Jātakas¹ as having an axe and a scourge of thorns in his hand, dressed in a yellow garment and adorned with a red garland. But none of the attributes are found in the man who is depicted in the relief as striking the ascetic.

¹ The Jātaka (ed. Fausboll), Vol. III, pp. 41, 179; Transl. (ed. Cowell), Vol. III, pp. 27, 118.

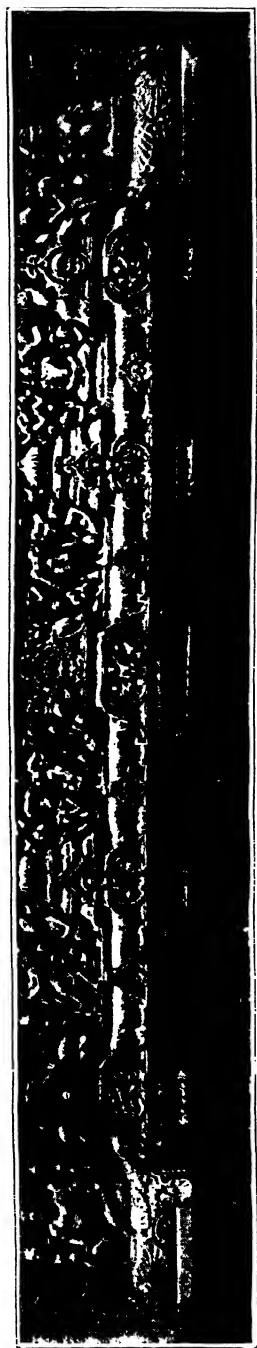
On the above considerations we must reject Paṇḍit Daya Ram Sahni's view that the four panels illustrate the Pāli version of the Jātaka.

The next point to be considered is—was the story in the relief based upon the story of *Kṣhāntivādi* in the *Jātaka-mālā*, or upon a version similar to the Sanskrit story? To put it briefly, when did *Ārya Śūra*, the author of the *Jātaka-mālā*, flourish? ¹ *Tāranātha* (p. 90) states that *Śūra* was known under different names, such as *Āśvaghosha*, *Mātṛcheṭa*, *Pitṛcheṭa*, *Durdarsha*, *Dharmika-subhūti*, and *Matichitra*. He also states that towards the end of his life *Śūra* was in correspondence with king *Kanika* and that he proposed to write the hundred Jātakas illustrating Buddha's acquirement of the ten Pāramitās, but, when he had finished thirty-four, he died. Kern, who thinks the tradition found in *Tāranātha* not probable, is induced by the purity and elegance of the language to place the *Jātaka-mālā* approximately between 550-650 A.D., to the age of *Kālidāsa* and *Varāhamihira*. Oldenberg observes that the work could not have been written after the end of the 7th century A.D., as it seems that the Chinese traveller *I-tsing* speaks of it. He, however, suggests finally that if No. 1349 of *Banqu Nanjio's Catalogue*, a work of *Ārya Śūra*, is written by our author, the *Jātaka-mālā* could not be later than the end of the 4th or the beginning of the 5th century A.D. Speyer, following Oldenberg, observes that *Ārya Śūra* must have lived before 434 A.D., the year in which the work of *Ārya Śūra* (No. 1349 of *Nanjio's Catalogue*) was translated into Chinese. He also observes that on the ground of purity and elegance of the language the *Jātaka-mālā* can be placed a couple of centuries earlier than the date proposed by Kern. But he thinks that the author of our work is posterior to the author of the *Buddhacharita*, who was a contemporary of the great *Kushāṇa* emperor *Kaṣishka*, on the ground that the two works are entirely different in style and spirit. Regarding the date of *Ārya Śūra* Winternitz observes: 'I-tsing praises the Jātakā-mālā (or Jātaka-mālās) among the works which were particularly popular and much read in India in his time. Among the frescoes of the caves of Ajanta there are illustrations to the Jātaka-mālā with verses by Ārya Śūra in inscriptions. Palaeographically, these inscriptions belong to the 6th century A.D. As another work by Ārya Śūra was already translated into Chinese in 434 A.D., the poet probably belongs to the 4th century A.D.'

According to *Tāranātha* (p. 181), however, *Śūra* was a great authority on metres. The author of the *Jātaka-mālā* also

¹ For the discussions on the date of *Ārya Śūra*, see J.R.A.S., 1893, pp. 306ff.; Speyer's translation of the *Jātaka-mālā*, pp. XVI-XVII, XXVII-XXVIII; A History of Indian Literature by Winternitz, Vol. II, p. 276.

handled his metres with great skill. Moreover, an illustrative relief of the Gupta period fits in with a story in the *Jātaka-mālā* which, therefore, must have been in existence before that period. It is also reasonable to think that *Ārya Śūra* must have drawn his materials upon a similar collection of birth-stories.



A Sculptured Lintel of Gupta Date from Sarnath.

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**Location of the land donated by the Nidhanpur grant
of Bhaskara-varman of Kāmarūpa.**

By PADMANATH BHATTACHARYYA.

Ever since the discovery of the Nidhanpur grant there have been two different opinions as regards the location of the land donated. It is quite natural to think that the land was located at the very place where the copper plates have been found, viz. in the Pañchakhaṇḍa Pargana in Sylhet (where Nidhanpur is located). Almost every other person than my humble self holds the above view. I have however been contending from the very beginning that the land granted related to a place in Rangpur, and not in Sylhet.¹ Dr. Nalinikanta Bhattasali of the Dacca Museum has recently contributed an article to the Journal of the Royal Asiatic Society of Bengal, Vol. I, 1935, No. 3, and has attempted to prove that the locality of the grant was in Sylhet, and as he is the most authoritative of all who hold the above view, I think it desirable to publish a rejoinder to Dr. Bhattasali's article stating also my grounds why I consider that the land was not located in Sylhet.

But before proceeding to do so, I should state here something about a new point, viz. whether the plates were unearthed at Nidhanpur or found in a tank at Supātalā nearby. In April, 1926, I went to Nidhanpur to inspect the spot of the find. The finder Musharraf Chaukidar had died long before, and the place was a deserted one. On enquiry I learnt that his daughter lived at a neighbouring village, and I went to her place and asked her if she knew anything about the plates discovered by her father. She said that she had been present when the plates—numbering seven in all—tied with a ring headed by a laddle-shaped seal, had been dug by her father out of a mound within the compound of his *bāri*.² So, although Babu Pavitrnanath Das was kind enough to inform me also, about his story that the plates had been discovered at Supātalā, I did not put much faith in it.

Now let me state why I am unable to accept Dr. Bhattasali's allegations, as convincing :—

¹ Rai Bahadur K. L. Baruā, Editor, Journal of the Assam Research Society, agrees with me so far that the locality of the grant was not in Sylhet.

² Śrīmān Sudhāmaya Bhaṭṭācāryya, son of the late pandit Rāmtanu Nyāyasāṅkhyachunchu, whose guest I was, accompanied me when I went to Nidhanpur and the neighbouring village.

1. The grant pertained to the Mayūra-sālmalāgrahāra Kshetram¹ which means a *field* attached to Mayūra-sālmalā-grahāra.² A field (which was a rice field, in all probability) must have been a flat and smooth plot : but the area within the boundary as given by Dr. Bhattasali—comprising almost the whole of pargana Pañchakhaṇḍa, is chiefly a hilly tract which has very little of rice field in it. Dr. Bhattasali has apparently depended on the reports of other people who probably did not state the real nature of the tract.³

2. The grant was made by king Bhāskara-varman who flourished in the 7th century A.D. : even then—i.e. 1,300 years ago—Gaṅgiṇikā and Śushka Kauśikā (both dried beds of whilom rivulets) were utilized as rice producing areas, as will be seen from the following extracts from the inscription :—

यदेतत् कौशिकोपचितकक्षेत्रं तत्फलं प्रतियाहकब्राह्मणानामिव ।

यत् गङ्गिण्युपचितकक्षेत्रं तद्यथालिखितकब्राह्मणैः समं
विभज्यतामिति । (ll. 126-128)⁴

[Meaning : The produce of that (part of the) field added by the (dried bed of) Kauśikā belongs (already) to the donee Brāhmaṇas : but (the produce of) what has been added by the Gaṅgiṇikā should be shared equally by the Brāhmaṇas as enumerated (above).]

Such having been the case 1,300 years ago, Dr. Bhattasali now comes up to identify both of them as rivulets with waters in their beds—one as Chhotagāng (small river) *alias* Marā (dead) Kuśiyara and the other as Lulā gāng (river Lulā) ! Any remark on this is superfluous.

3. The land was bounded on the East by Śushka Kauśikā and on the West by Gaṅgiṇikā :—their beds having been extended further southwards the points where they ceased to be the boundary of the grant were marked by logs of hewn fig tree.⁵ Then again, as the two river beds were wide apart from each other another log of hewn fig tree was posted in the middle to mark the southern boundary.

¹ Vide ll. 50-51 of the Nidhanpur grant inscriptions : pp. 16-17, Kāmarūpa Śāsanāvali.

² Agrahāra = A village of Brāhmaṇa residents.

³ In a letter to Dr. Bhattasali I asked him to visit the locality himself which apparently he has failed to do.

⁴ Vide p. 25, Kāmarūpa Śāsanāvali.

⁵ The Sanskrit word is 'Dumbarī chcheda' which means 'Chhinna dumbarī' under the grammatical dictum छद्भिचिनो भावो द्रव्यवत् प्रकाशते ; or the word 'Chhedā' has a meaning of 'khaṇḍa' (section) (Vide Śabda-kalpadrūma).

North-West and the North-East boundary of this very field. Moreover, in the enumeration of the trees and plants in Manu-saṁhitā VIII, verses 246-7, occur even shrubs, canes and bamboos, that can mark the boundary of a plot of land ; and in fact in the descriptions of boundaries of the various grants comprised in the Kāmarūpa Śāsanāvali, we find canes, bamboos,¹ trunks of trees and even an ant-hill.

As to (b) even admitting Dr. Bhattasali's estimate (viz. that the Southern boundary was $2\frac{3}{4}$ miles long) a fairly big log of a fig tree, as high as a man, planted in the middle could be seen from both the ends of Southern boundary line as the field was a practically flat and smooth area.²

4. Dr. Bhattasali thinks that we have been misled by an impression that Gaṅgiṇikā was unknown in Sylhet. I would point out that I stated in the Kāmarūpa Śāsanāvali (p. 6, footnote 1) that it was known in Sylhet as Gāṅginā.

5. On the North-Western boundary there was 'Kumbhākāra garttah' (singular) meaning a potter's pit. Dr. Bhattasali interprets it as a 'series of cavities in the earth the handy-work of potters'.

6. The northern boundary was marked by a big Jāṭali tree which Dr. Bhattasali takes to be the same as Jhāṭa that means 'jungle'. Jāṭali is a Sanskrit word and has an alternative form Jhāṭali meaning a tree named 'Jhāṛli' in Bengal and 'Mokha' in Marathi.³ Jhāṭa is a quite different word. Not satisfied with even Jhāṭa (as it was perishable) Dr. Bhattasali converts Jāṭali into Chāṭal which is the name of a *bil*⁴ shown in his map.

7. A person named Khāsoka had a tank that marked the North-Eastern boundary of the grant.⁵ He was dead and gone 1,300 years ago : yet Dr. Bhattasali finds his name commemorated in two modern villages about a mile apart from each

¹ *Vide*, for example, p. 158 of the Kāmarūpa Śāsanāvali where are mentioned bamboos (even a bamboo fencing) a trunk of Dumbārī tree and, last of all, an ant-hill.

² I must state, however, that although the area was an extensive one I cannot agree with Dr. Bhattasali's estimate of $5 \times 2\frac{3}{4}$ miles = 26,620 bighas allotting about 132 bighas to each of 200 shares. I would not allot more than $\frac{1}{4}$ th of that (i.e. 33 bighas) to each share enough for a family of Brāhmaṇas reputedly plain living in those days. So Dr. Bhattasali's estimate of length and breadth must be reduced to half and Southern boundary line might not be more than about 11 or 12 furlongs long though it lay between the dried beds of two rivers that had been apparently small ones.

³ *Vide* Addenda at p. 201, Kāmarūpa Śāsanāvali.

⁴ Which according to Dr. Bhattasali was imperishable—so exists even now (after 1,300 years) to give evidence in his favour.

⁵ The spot where Dr. Bhattasali expected to find Khāsoka's tank has been marked by * (asterisk) in his map—but absence of the tank there should I hope convince him at last of the 'perishable nature' of a boundary mark.

other : one named Khāsā (that means good) and the other Khasir (Kha=sky, Sir=head ; probably so called on account of its lofty position).

8. The grant was within the District of Chandrapuri and Dr. Bhattasali has found a village named Chandrapur a few miles off the alleged locality of the grant. He does not state what marks of antiquity there are in the village : the name Chandrapur or Chāndpur is commonly found in several villages in the District of Sylhet.

I should now state here why I have been persistently maintaining that the donated land could not have belonged to Sylhet.

1. Yuān Chwāng who had visited Kāmarūpa in Bhāskara-varman's time spoke of Shih-li-cha-ta-lo, North-East of Samatāṭa, as one of the six kingdoms not visited by him. This Shih-li-chatalo was Śrī-haṭṭa¹ (Sylhet) and apparently it was then a kingdom not included in Kāmarūpa visited by the Chinese traveller.

2. That there were independent rulers of Sylhet, about that time is proved by a curious insertion, on the top of an inscription dated about 600 A.D., of the word 'Śrīhaṭṭādhiśwarebhyaḥ'.²

3. That Sylhet was included in Kāmarūpa is generally assumed from verses like the one in the *Yoginī Tantra*, part I, paṭal 2, defining the bounday of Kāmarūpa—

करतोयां समाश्रित्य यावद्विक्करवासिनीम् ।

× × × ×

दक्षिणे ब्रह्मपुत्रस्य लाक्षायाः सङ्गमावधि ॥

But even in the same Tantra, the name of Sylhet is mentioned separately from Kāmarūpa—

ऐशान्यां पूर्वभागे च कामरूपं विजानिहि ।

× × × ×

श्रीहट्टमपि पूर्वे च × ×

¹ Dr. Bhattasali, I know, differs from me, and maintains with some Europeans *savants* like M. Finot of Indo-China, that Shih-li-chatalo was Śrikshetra (=Prome in Burma) ; but I regret that I could not see eye to eye with them. (Those who like to see my original article on the identification, may read *J.R.A.S.*, January, 1920 ; and my rejoinders on M. Finot's articles were published in *Hindustan Review*, July, 1924, and *Indian Historical Quarterly*, Vol. IV, No. 1.)

² The inscription was on a temple of Mahādeva, dedicated by Iśwarā Devi, a Queen of Jālandhara. *Vide Epigraphia Indica*, Vol. 1, part 1, p. 20.

This indicates that Sylhet fell within the spiritual boundary of sacred Kāmarūpa, but was independent of it politically.¹

4. Tradition has it that the very locality (Panchakhaṇḍa) was about that very time (641 A.D.) under the rule of a king of Tipparah.²

5. The Mayūra Śālmala-agrahāra belonged to Chandrapuri³ Vishaya : the name of this Chandrapuri occurs in the description of the boundary of a village granted by Vanamāla Deva that was situated west of Trisrotā (modern Teesta in Rangpur).

6. Although the grant related to a land that was not in Sylhet, yet I have given my reasons how the copper plates could be found in the Pañchakhaṇḍa Pargana in Sylhet. There were two Brāhmaṇas designated as 'Paṭṭaka-pati' (master of the copper plates); one Sādhāraṇa Swāmin of the Prāchetasa gotra (clan); and the other, Monoratha Swāmin of the Kātyāyana gotra.⁴ After some time the family of Sādhāraṇa Swāmin became extinct; and in fact there is hardly any trace of a Brāhmaṇa of the Prāchetasa gotra nowadays. So the descendants of Monoratha Swāmin of Kātyāyana gotra became the sole possessors of the copper plates. Now there is a tradition, the same as already mentioned above, that the place Pañchakhaṇḍa owes its name to importation therein of the Brāhmaṇas of five (*pañcha*) gotras by a certain king of Tipparah. They in their turn invited Brāhmaṇas of five other gotras to come and live with them in Pañchakhaṇḍa and one of those gotras was Kātyāyana and even now Brāhmaṇas of this gotra are found in the locality. The plates were brought over to Pañchakhaṇḍa by the Brāhmaṇas of the Kātyāyana gotra—the descendants of the said Monoratha Swāmin—who came here.

All of what I have stated above as reasons for my maintaining that this land granted by Bhāskara-varman did not belong to Sylhet, have also been stated in the introductory notes to the copper plates inscription of Bhāskara-varman published in the

¹ In a Buddhistic publication named *Sādhana Mālā*, we find Śrīhatta in *Sāghanā*, No. 234 (also *Sirihatṭa*—how like *Shih-li-chatalo* of *Yuān Chwāng*—in *Sāghanā*, No. 232), mentioned as a place quite distinct from Kāmarūpa. *Vide* Rai Bahadur K. L. Barua's article on Kāmarūpa and Vajrayāna in Vol. II, No. 2, *Journal of the Assam Research Society*.

² Dr. Bhattachali, however, has cleverly substituted the name of Bhāskara-varman in place of that of this king of Tipparah affirmed in the tradition.

³ It should be stated that the reading, as published in the *Journal of Asiatic Society of Bengal*, 1840, was *Chandrapari*, which being meaningless has been corrected into 'Chandrapuri' in the Kāmarūpa Śāsanāvali as the reading published in the said *Journal* was full of mistakes and inaccuracies : *vide* my remarks in the preface of the Tezpur grant of Vanamāla Deva (pp. 55-56) of the Kāmarūpa Śāsanāvali). The original plates have unfortunately been missing; so all chances for checking the corrections have gone along with the plates.

⁴ Bhāskara-varman's copper plates inscription, ll. 54-56 (p. 17, Kāmarūpa Śāsanāvali).

Kāmarūpa Śāsanāvali¹ a copy whereof I presented to Dr. Bhattasali as soon as it was published about four years ago. It is very strange that he has not cared to meet any of my arguments stated in the Śāsanāvali :—nay, although he has been good enough to mention many of my articles published in various Journals—English and Vernacular—he has not favoured the Kāmarūpa Śāsanāvali with any notice whatever, although it is in this book that my views on the inscriptions of Kāmarūpa attained a fair finality.

¹ For a fuller account, read p. 7 *et. seq.* of the Kāmarūpa Śāsanāvali.

A Buddha Image from Kurkihār.

By A. C. BANERJI.

Kurkihār is now a small village, about 23 miles east of Bodh-Gaya. It was visited by Major Kittoe in 1846 and 1848,¹ who dug up a large number of statues from one of the mounds, and deposited them with the Asiatic Society of Bengal; from which institution these have now found a safe refuge in the Indian Museum, at Calcutta. The place was also visited by late Sir Alexander Cunningham, during the working season of 1861-62.² After Cunningham's visit, Kurkihār remained neglected, and its mounds became the favourite quarries of modern builders. The site has recently gained public notice by the accidental discovery of a large number of metal images of the Pāla period described by Mr. K. P. Jayaswal.³

The purpose of this contribution is not to discuss the ruins of Kurkihār, nor to mourn the careless regard shown by our countrymen to the ancient remains of their land, but to describe one of the sculptures found at the place. The image under consideration is of black basalt and measures 4' 9" × 2' 9".⁴ The whole stele may be divided into three parts. First, the throne (*vajrāsana*), the front of which consists of number of recesses formed by six pilasters. Each of the niches at either end, contain an Elephant, the niches next to them is occupied by female figures, kneeling on either of their knees. The female figure on the right of the central recess, which contains the lion of the Śākya race, is kneeling on a prostrate figure of Ganeśa, with right hand upraised. Evidently the figure is that of Aparājītā. The female figure on the left is probably the 'Earth-goddess' attesting Gautama's right to seat on the *vajrāsana*. Above the throne is double rows of lotus petals (*viśvapadma*) on which we find the figure of Gautama Buddha seated in *vajraparyāṅk-āsana*; the fingers of the right hand touching the earth. His body is covered with drapery: On his right we find Maitreya with his right hand in *vyākhyāna-mudrā*, and the left hand holding a *Nāgakeśara* flower.⁵ He bears on his crown a small

¹ *Journal of the Asiatic Society of Bengal*, Vol. xvi, pt. i, pp. 80 and 602, and Vol. xvii, pt. ii, pp. 234 and 536.

² Cunningham, *Annual Report of the Archaeological Survey*, Vol. i, pp. 14-16.

³ *Journal of the Indian Society for Oriental Art*, Vol. ii, pp. 70-82.

⁴ J. Anderson—*Catalogue and Handbook of the Archaeological Collection in the Indian Museum*, Calcutta, 1883, Vol. ii, p. 73.

⁵ B. Bhattacharya—*The Indian Buddhist Iconography*, pp. 13-14, Calcutta.

stūpa. On the right is Padmapāni, with a lotus in his left hand and Amitābha on his head; and his right hand in *varadā-mudrā*.¹ The effeminate grace of these figures led Anderson to describe them as female figures.² Just behind the shoulders of the main image is a pilaster of pleasing design, at the centre of which we find the halo (*prabhāmaṇḍala*) with flames issuing out of it. On either side of the halo are miniature figures of Buddha; that on the left is in *dharma-chakra-pravarttana-mudrā*; the arms of the figure on the right having been broken, its attitude is not quite clear. Just over the head of the main image, is the Bo-Tree (*ficus-religiosa*), flanked on either side by the figures of Vidyā-dharas. It is clear that this slab, like many other productions of the eastern Indian school of mediæval sculptures, depicts three particular incidents of Gautama-Buddha's life: (1) The enlightenment at Uruvela, (2) the first sermon at the Deer-Park, and (3) ?.

The stele is remarkable for two reasons. One of which is the pedestal. There are scores of specimens of Buddha in *bhūmiśparśa-mudrā*, in the Indian Museum; but none of these possess a pedestal like the one under discussion, depicting as it does, the earth-goddess as well as Aparājītā. Moreover, in mediæval images, we very rarely meet with the figure of the earth-goddess when Buddha is shown in the attitude. The custom seems to have gradually fallen into disuse after Post-Gupta period.

The central lion is a very poor production, but the sculptor has attained a considerable measure of success in modelling the fore-parts of the uncouth elephants. The two female figures are remarkable for their slim beauty, and proportion. The central figure of Gautama Buddha as well as those of the attendant Bodhisattvas are endowed with a graceful roundness of the female form. The shoulders of Buddha are as broad as that of an elephant, while the waist has been made slender like a lion. The modelling of the contour of the body, which is in high relief, produces the impression of roundness and volume. The soft texture of the skin and the drapery has been carefully brought out. The folds of the drapery are distinguished by single rhythmic incisions. The hairs and the Bo-Tree have been schematically treated. The stele belongs to the 11th or 12th century A.D.

¹ *Ibid.*, pp. 8-9.

² Anderson, *op. cit.*, p. 73.



An image of Buddha from Kurkihār, now in the Indian Museum.

Abū Nukhailah—A Post-classical Arab Poet.

By A. H. HARLEY.

Abū Nukhailah is generally stated to have been his name, and not his *kunya*h or to-name. Ibn Qutaibah however holds that it was the latter, and that he was so styled because his mother gave birth to him beside the trunk of a palm-tree (*nakhlah*)¹; it is also said to have been given him because of a small palm-tree which he frequented.² Abu'l-Junaid and Abu'l-'Irimās are mentioned as his to-names.

His lineage has been traced back through the Banū Himmān and Banū Sa'd to the tribe Tamīm; the Himmān were settled in the quarter of Basrah called from them Himmān. On his return from Syria after the death of his father, this enviable genealogy fell however under suspicion. It seems that he had not seen eye to eye with his father, who regarded him as a disobedient and froward youth, and forbade him the house. Later when opportunity favoured, he took what measures he could to establish himself as a man of pedigree, and is quoted as saying of himself:—

I'm a scion of Sa'd—I'm placed amid the 'Ajam,— (Rajaz).
Uncles of both sides I have 'mongst whom I choose to look.³

When driven from his father's house he went out among the Badawī seeking sustenance, and seized the opportunity of mixing with them to study poetry and practice the art of versifying. The primitive iambic measure of *rajaz* appealed most to him. This relic of a cruder age had adapted itself to a newer need, and was destined to enjoy through full two centuries, beginning from about the time of the Prophet, a period of remarkable efflorescence. But he also practised the more developed verse-forms in vogue for the *qasidah*.⁴ His lines began to be repeated in desert and town, and at length he made a bid for a hearing in the court at Damascus. There he obtained access to Maslamah, a younger son of 'Abdu'l-Malik, and is said to have approached him with this panegyric in *ṭawīl*-measure⁵:

¹ Ibn Qutaibah, *K. ash-Shi'r* . . . (ed. Cairo, 1332 H.), 142.

² *Rannātu'l-Mathālith* . . . (Selections from *K. al-Aghānī*; referred to here as *Bei.*): *Bei.* I, 307, *f.n.*

³ *Qut.*, *l.c.*

⁴ *Agh.*, XVIII, 139 (ed. Egypt, 1323 H.).

⁵ *Ibid.*, 140.

O Maslam, scion of all the Khalifahs,
 knight in war's tumult and mountain on earth,
 I thank thee,—and thanks is linked with piety ;
 yet not each thou givest a favour, fulfils ;
 and thou didst throw, when I visited thee,
 about me a wrap of ample length and breadth,
 and enlivened my name and fame obscure,—
 and there are grades of distinction in fame.

In the subsequent conversation with Maslamah he claimed to be the best *rajaz*-writer among the Arabs, but when he was put to the test his memory failed him ; nothing occurred to him but a recent *rajaz*-poem by the reputed Ru'bah, son of the famous *rājiz* al-'Ajjāj ; his discomfiture was not yet complete till he began reciting it as his own, when Maslamah bade him bother no longer for he could repeat it better himself. Soon however his eulogies in this measure earned for him a place with him, and many favours and much monetary reward.

Not only was *rajaz* his cherished verse-form, but he does not appear to have been too scrupulous about quoting as his own the compositions of the more famous *rājiz* Ru'bah. One such instance is said to have occurred in the presence of 'Umar b. Hubairah ; unfortunately for him Ru'bah was present, and overheard and rebuked him ; Abū Nukhailah himself relieved the tenseness of the situation with a laugh and said : ' Am I other than one of your objects of good deeds, and your follower, and responsible to you ? ' ¹

Among the poems which probably commended him to Maslamah should be included the following, which he read to him when the latter returned in 102 H., 720, from battle at 'Aqr, near Bābil, against Yazid b. al-Muhallab, who was there slain, and whose whole house perished soon after. ²

Maslam, O Maslamah of battles, (Rajaz).
 thou art free from bane of defects,—
 pith of generosity and fine quality ;
 where no *thiqāf* is, would be no training ;
 we rend with him the coverings of hearts :
 the people are become sheep to the wolves.

In reward of his services Maslamah was at once made governor of Iraq and Khurasan, but however competent as a strategist in the field he apparently did not possess the characteristics of the administrator ; he appointed as his lieutenant in Khurasan his son-in-law Sa'id 'Khudhainah' ³ who quickly set the heterogeneous elements in commotion and was deposed

¹ *Agh.*, XVIII, 145.

² *Ibid.*, 140 ; *Tab.*, II, 1415 (ed. de Goeje) ; as-Suyūṭī, *Ta'rikhu'l-Khulafā'*, 247-8 (ed. Calcutta, 1273 H., 1857).

³ *Tab.*, II, 1418 ; Bevan, *K. an-Naqā'id* . . . , 363.

in 103 H.¹; he himself did not remit to Damascus the surplus revenues of his province, and in the very year of his appointment, 102 H., was replaced by 'Umar b. Hubairah, and thereupon returned to Syria. Henceforward his services seem to have been of a military nature; in 114 H. his effective measures defeated the Khāqān of the Turkomans.² He died in 122 H.³ in flight from the Turkomans, who had enveloped his troops; the date 121 has also been given.⁴ Whether his friendly connection with the poet persisted long or close is not mentioned, but it is stated that the latter was on his way to Hishām b. 'Abdi'l-Malik (r. 105–125 H., 724–743) when he learned of his erstwhile patron's death.

He seems to have been a stranger to Hishām at this time, and needed to be introduced. He made the acquaintance of two courtiers, a Qaysite and a Yamanite, and decided to exploit the services of the former as the nearer of kin and the likelier, and was advised by him to keep supplication out of his eulogy otherwise Hishām would be displeased. When he was duly introduced by this sponsor next day, he found that Abu'n-Najm, of Banū 'Ijl, had preceded him into the presence, and was ready to declaim a *rajaz*-poem he had composed.

The tribes Sa'd and 'Ijl had earned a name in *rajaz*.⁵ Abu'n-Najm, who belonged to 'Ijl, lived to a ripe old age; his literary activity appears to have extended backwards into the reign of 'Abdu'l-Malik (r. 65–86 H.), and forwards into that of Hishām b. 'Abdi'l-Malik. He specialized in *rajaz*, and it has been claimed that he wrote the best *urjūzah* in Arabic.

On this occasion Abu'n-Najm went on at great length, and included in his poem supplication, and urged in his suit:

Time's harshness inclined towards me, (*Rajaz*).
and the surplus slaves were sold,
at a price which involved a loss,
and colt on colt, and stallion too.⁶

Hishām's face showed his vexation. Abū Nukhailah states that at this juncture he asked and obtained permission to recite his *rajaz*-poem⁶:

When she I desire comes to me, like honey
which with date-juice is mixed, during sleep,
what cooling for one cured through coolness is she,
who is mindful of the camels with sores!

¹ Tab., II, 1436.

² Tab., II, 1560, 1562.

³ Wellhausen, *Arab Kingdom* . . . (tr. by Weir), 351 f.n.

⁴ al-Yāfi'i, *Mir'ātu'l-Janān* . . . , I, 257 (ed. Hyderabad).

⁵ *Agh.*, IX, 74; XVIII, 140; *Qut.*, l.c., 4, 28 (ed. de Goeje).

⁶ *Agh.*, XVIII, 141; *Bei.*, I, 310.

I say to the reddish camels : ' Quick, press on ! '—
 and they speed on with exceeding fast pace—
 how many a brave one has strayed therein,
 and one after another who were in haste !—
 they are wearing, as they go with constant gait,
 night that is coloured like smooth Persian cloke,
 unto the Chief of the Believing, the gracious,
 lord of Ma'add and the rest besides,
 one such as men call proud of bearing and brave,
 possessing glory and regard beside ;
 in his face a full moon appears, auspicious,—
 thou art the hero, the chief in effort grim ;
 thou art vested with it,¹ in whom power is united ;
 when thou dost rise, the thunder-cloud pours lavish shower.

It brought him a reward within a few days, and led to other favours.

He later turned against his Umayyad patrons, even indulging in satire of them, and went over to the Abbasids, who had then come to power, not from any political principles but the motive of personal advantage ; he designated himself ' Poet (*Shā'ir*) of the Banu Hāshim '.² The above-quoted *rajaz*-passage addressed to Hishām was now included in the famous *urjūzah* with final consonant *dāl* and dedicated to as-Saffāh,³ an instance of literary opportunism not without precedent or successor.⁴

A story which illustrates the quick effectiveness of the metrical lampoon is told of him in connection with one whose identity is not entirely certain, Shabīb b. Shaibah⁵ (or Shabbah),⁶ but who was apparently the well-known *Khaṭīb*, or public orator, and who was with al-Manṣūr at the close of his life, and was also in attendance later on al-Mahdī. Abū Nukhailah observed him wearing robes he fancied for himself, and asked him for them. Shabīb made him a promise of them, but omitted to implement it, and found himself pilloried in the lines :—

My people, take not Shabīb for chief,— (Rajaz).
 a cheat,⁷ a cheat's son, and false.—
 Does a she-wolf bear but a wolf ?⁸

Shabīb sent the robes to him, and the gift though belated turned abuse to praise :

¹ I.e., the Khilāfat.

² *Agh.*, XVIII, 139.

³ *Infra*, p. 62.

⁴ *Agh.*, III, 54 ; ' *Ajabnāma* (E. G. Browne, Mem. Vol.), *Art.* Krenkow, p. 262.

⁵ *Agh.*, II, 33 ; VI, 136 ; al-Jāhiz, *K. al-Bayān* . . . , I, 278 (ed. Cairo, 1351 H., 1932) ; *Tab.*, III, 430.

⁶ *Tab.*, IX, 312 (ed. Egypt, 1326 H.) ; *Agh.*, XVIII, 145.

⁷ *Cf. Agh.*, XVIII, 145.

⁸ *Ibid.*, 139, 145.

When Sa'd go at morn to their Shabīb, (Rajaz).
 their strong man and their orator,
 from the sunrise till its setting
 I wonder at their mass and quality.

Both these *rajaz*-passages however occur in another setting, where they would also be appropriate, but the slight circumstantial evidence available favours the former. The poet's assertion as to his origin had been impugned, as has already been mentioned. In his desire to rehabilitate himself as of respectable lineage in Banū Sa'd, he bought a building plot in the quarter of Basrah called Himmān after his own connections settled there, the Banū Himmān b. Sa'd b. Zayd Manāt b. Tamīm.¹ He apparently intended a quite imposing residence, for he had been richly rewarded for his verse,² and now besides he asked for financial help in constructing it, and people gave to him in order to purchase protection from his tongue and his mischief. Shabīb was approached, but excused himself, and this provoked from the poet the three satirical lines quoted above. Shabīb made a stand saying: 'I will not give anything notwithstanding this composition, for he has held one hand flat for an offer, and filled the other with ordure, and said: "If one puts something in my flat hand, [good and well]; otherwise I have filled it with my ordure", for the sake of a residence....' The tribal elders interceded, but Shabīb would not give anything. On the other side Abū Nukhailah swore that he would not cease to assail his honour till he yielded. Thereupon fear came to Shabīb and he sent him what he asked. The poet went to his house early next day, while he was seated giving audience, and delivered himself in the above four lines of *rajaz*.

There is a doublet however connected with the building of the house; Khālīd b. Šafwān here takes the place of Shabīb.³ Khālīd was also a famous public orator; he had once gone on deputation to Hishām b. 'Abdī'l-Malik, and was of the number of those who had night-discussions with as-Saffāh⁴; he was gifted with ready and impressive expression in *saj'* (rhymed prose)⁵; he is quoted by Shabīb as his authority for a narrative concerning Hishām⁶: and he was included in the quartette of Arabia's most miserly persons.⁷ According to this account he reproached in *saj'* Abū Nukhailah with extravagance of outlay and spoke scathingly, as described above, of his two hands outheld, and then took his departure. Someone asked the poet if he would satirize him, but he answered that the other's mocking reference to his buildings would only be followed by another. If this incident is true of Khālīd, as perhaps it is,

¹ Yāqūt, *Mu'jam* . . . , II, 330.

³ *Ibid.*, 139.

⁵ *Agh.*, VII, 69.

⁷ *Ibid.*, II, 44.

² *Agh.*, XVIII, 139, 140.

⁴ *Bayān*, I, 278.

⁶ *Ibid.*, II, 33.

for he was an adept in the use of *saj'*, the above seven lines of *rajaz* probably refer to Shabīb's promise of his raiment.

The existence of a doublet is found in another narrative. 'Umar b. Hubairah, when governor of Iraq, is stated to have imprisoned al-Farazdaq (*d.* 110 H.), the famous Tamīmīte poet, a native of Basrah, for satire of himself which wounded his prestige, and to have refused to let anyone intercede for him.¹ But Abū Nukhailah took advantage of the festal occasion of 'Īdu'l-Fiṭr, after the fast of Ramaḍān, to enter into the presence of 'Umar, and in a *rajaz*-poem pleaded his cause, one ground being that an evil-doer of Banū 'Ījl, who had been brought from 'Aynu't-Tamr, had been given his release at the intercession of his kinsfolk, the Banū Bakr b. Wā'il. The story goes on to say that al-Farazdaq was set free, but when informed of the name of his intercessor the notoriously dour old fellow returned to the prison protesting against a man of Banū 'Ījl having been released before him, and that he himself had been put under obligation to a merely putative kinsman of Banū Sa'd. Ibn Hubairah humoured him by declaring that now his freedom was granted for his own sake alone and not at the instance of any intercessor. When 'Umar was deposed in 105 H., 724, and imprisoned—to be murdered soon after when he tried to make his escape, al-Farazdaq eulogized him, and 'Umar exclaimed: 'I have seen none more magnanimous than he; he satirized me while a governor and eulogized me while a prisoner'.

The story however pretty seems to be a garbled version of another. It is true that al-Farazdaq was once cast into prison, but at the instance of Hishām b. 'Abdī'l-Malik for reciting in his presence at Makkah an ode in eulogy of Zaynu'l-'Ābidīn, a grandson of 'Alī b. Abī Ṭālib,² but another term of incarceration does not appear to be authenticated from any source. Further, the compiler of the *Aghānī* states that he saw the real story in a certain manuscript, and that it concerned Yazīd, son of 'Umar b. Hubairah, and two prisoners of the *Shurūt* (i.e. Khawārij) who had been taken at 'Aynu't-Tamr. Yazīd b. 'Umar b. Hubairah had been appointed Governor of Iraq by Marwān in 127 H., 745, and in this year fought the Khawārij at Ghazzah, near 'Aynu't-Tamr,³ and at the latter place in 129 H.⁴ 'Aynu't-Tamr was involved in the decisive action between Yazīd and Qaṭtabah, the general of Abū Muslim, near Karbalā' in 132 H., a few months before the final blow to the Umayyad dynasty.⁵ Yazīd was included in the general amnesty concluded in 132 H. by Abū Ja'far (later called al-Manṣūr) and ratified by as-Saffāh, but was treacherously murdered, and this breach of faith was

¹ *Ibid.*, XVIII, 141-2.

² *Agh.*, XIV, 75; Nicholson, *Literary History of the Arabs*, 243.

³ *Tab.*, II, 1913-4.

⁴ *Ibid.*, II, 1944.

⁵ *Ibid.*, III, 21.

remembered as a reproach.¹ The incident under reference should probably be set down to 127 or 129 H.

One of the two Khawārij-captives was a member of Bakr b. Wā'il, who interceded successfully for him; Abū Nukhailah interested himself on behalf of the other, a Tamīmīte, and produced a longish poem in which he made an appeal for his release:—

Praise to God, that ruleth over the world— (Rajaz).
He it is who banishes all rancour!

I present to the generous Imām
my verse, and loving counsel after.

Thou didst release yesterday a captive of Bakr.
Could some or many of mine be a ransom to thee,
on any ground, or plea, or pretext
would save this Tamīmīte wanting in gratitude
from the heavy brown rings of the fetters?
He has not ceased to be bemused since time of old,
a man of qualities that wax, of sense that is meet,—
give him to thy maternal uncles this 'Īd-day.²

He used to write eulogies on al-Junaid b. 'Abdi'r Raḥmān al-Murri,³ a general who extended the Muslim frontier yet further into India in the time of Hishām, and in the same reign was dispatched against the Khāqān. He died of dropsy in 116 H.,⁴ but death was made harder for him by his ignominious deposition at the hands of this ruler whom he had served so capably. Abū Nukhailah composed in lamentation for this patron:—

By my life, the mounted party of Junaid is gone, (Ṭawīl).
to Syria from Murr, and his troops are departed;
the Syrian mounted party left behind them
of Ghatafān a man⁵ whose detractor labours in vain,
one who used to travel at night to the foe as if
the clamorous sandgrouse were his troops each day,
and looked as were it the full moon beneath his flag,
when he moved out in formation, his squadrons with him.

His introduction to as-Saffāḥ, the first of the Abbasid house, is said to have been in this wise. Realizing that his former attachment to the Umaiyads would be prejudicial to him now in approaching their successors, he bided his time till he knew that as-Saffāḥ had extended his pardon to a greater offence than his own, and then entered and asked permission to recite some verses. But the ruler protested that he had no need of

¹ *Ibid.*, III, 211.

³ *Ibid.*, 147.

⁵ Refers to al-Junaid; Ghatafān was a tribe in the Qays-group.

² *Agh.*, XVIII, 142.

⁴ *Tab.*, II, 1563-5.

his poetry, and in any case he would only recite what was left over from the Umayyads, whereupon Abū Nukhailah declaimed¹:

We are people in fear of kings (Rajaz).
 when they ride o'er necks and haunches,²
 we based hope for a time on thy father,
 thereafter, our hope was in thy brother,
 and after him our hope is based on thee;
 and what I've said to any but thee
 is false, and this atones for that.

As-Saffāh was well satisfied and made him poet to his house.

In expectation of a reward he eulogized al-Muhājir b. 'Abdi'llāh al-Kilābī, who was the Governor of Yamamah and Bahrain in the reign of Hishām³ and of al-Walid b. Yazīd (r. 125-6 H.),⁴ and was a patron of Dhu'r-Rumma and of two so mutually antipathetic poets as Jarir and al-Farazdaq. Abū Nukhailah and the governor were as closely resembling as the proverbial two peas:—

O habitation of Umm Mālik, safe abide (Rajaz).
 though I be far somewhere, and be at ease!
 What would I do if thou didst not communicate
 a message, or how would it be if thou shouldst yearn?
 My daughter says to me in tones of reprovers:
 'My father, a day comes thou wilt leave me orphan';
 Then answered I: 'Nay, know this for certain
 that I live till an hour fixed by a written decree.'
 Were I in the darkness of a dark mountain-path,
 or in the sky which I could with a ladder scale,
 I must to the uttermost dree my own weald.
 By the Lord of those camels that amble fast,
 By the Lord of the well of Zamzam, and by Zamzam,
 I will laud on my arrival that goodly one—
 yea, on this my journey from my tenting-place—
 'Alī ibn 'Abdi'llāh, the chief among chiefs,
 for I—and knowing implies close observing—
 was not aware of this Muhājir so bountiful,
 until the decrees of the unjust were scattered;
 Muhājir, thou possessor of plentiful favour,
 when thou dost produce the best of booty
 thou sharest the gift, with abundance of favours.
 And to Banū Tamīm from thee is best portion,
 when they meet together like thirsty camels;
 Syria knows and every festal season
 that thou art sweet through sweetness of disposition
 one time, and another thou art like colocynth.⁵

¹ *Agh.*, XVIII, 143; cf. *Tab.*, III, 347.

² Cf. *Bei.*, I, 313; *inf.*, p. 66.

⁴ *Ibid.*, 934¹³.

³ *Bevan*, *Naq.*, 539¹¹.

⁵ *Agh.*, XVIII, 145-6.

Al-Muhājir ordered for him a she-camel, whereat the poet went off in high dudgeon and exploded in satire :

al-Kilābī the mean, of the missing tooth, (*Rajaz*).
gave for my eulogy of him an old she-camel
whose bones are not set, but its end is near.

This reached the ear of al-Muhājir, who quickly took pains to appease and reward him. But Abū Nakhilah exacted another benefaction on the ground of their resemblance, maintaining that resemblance stood among men for community of pedigree.

Friendly relations prevailed till al-Muhājir's death, when the poet wrote this *marthiyah* :—

Friends, I have no abode in Yamāmah, (*Tawīl*).
nor is there cooling for my eye after Muhājir ;
what goodly life I had is passed, so feel sympathy
for a wayfarer, bent on leaving, a wanderer.
Though now thou art in the tomb, Ibn Wā'il,
thou didst adorn conclave and pulpits ;
and but for thy drawing the sword, resident
had not slept, nor traveller's path been safe ;
sore has been on the tribes Qays and Khindif the weeping
for 'Alī, al-Walid, and likewise Jābir ;
a moon did sink among them—yea, it seemed
as sank a full-moon amid the shining stars !¹

Presumably the story now to be quoted follows the preceding in order of time. He borrowed money from his green-grocer, Mā'izu'l-Kilābī, in Yamamah. When the debt grew large and Abu Nukhailah remained adamant against dunning, the creditor asked the assistance of the Collector. The wily one gave Mā'iz the slip however and went off one night to Mausil, with a three days' start of any action. He taunted the duped tradesman by telling him to fly in quest of him to Harran, or Mausil, or Takrit, and in another poem adds some detail ² :—

O Mā'iz of the lice, and the mean house where (*Rajaz*).
we passed the night,—our mule in the stable ;
and the demon of rhymes passed the night
dictating to one most famous of masters ;
no benefit would be my knowledge or ignorance
had Mā'iz destroyed my palm-trees ;
he ceased not roasting me, till my anger boiled,
until when anger threw me afearing,
I severed (relations) as severs the sharp sword-blade.

He had a sister married to someone called Mayyāt. Abū Nukhailah managed her property till a day came when she objected that he was appropriating the proceeds to his own benefit. His reply, in *rajaz*, is self-laudatory, and concludes

¹ *Agh.*, XVIII, 146.

² *Ibid.*, 144.

with two lines which are shamelessly coarse and of the order of retort by abuse.¹

He married a woman of his own people. The birth of a daughter vexed him so that he divorced his wife. Later he regretted this step and took her back. When in his house one day he heard unexpectedly the voice of his daughter, while her mother was playing with her, and he softened towards the child, and went to her and began dandling her and saying :—

Daughter of one who loved not a daughter, (Rajaz).
thou wert not more than five [days] or six
ere love perished in me, and I from grief
was bruised so in heart, it broke ;
thou art forsooth better than a boy
gets drunk at morn, is drowsy by even.²

His devotion to his little son 'Alī, according to an account by the latter, was a source of annoyance to his wife, Umm Ḥammād al-Ḥanafiyyah, who complained that it made him neglectful of the children and the household. Her anger grew in vehemence, till one day he spoke flattering words that turned away her wrath :—

And there is no friend like Umm Ḥammād, (Wāfir).
when the matter is too grave for speech ;
gracious I see her, and my eye is cooled,
and her wheedling substitutes my scolding her.³

Another incident of a personal nature is related by this son 'Alī. Once on his father's return from Makkah he accompanied him on a visit to some property which he owned, and which had not been well cared for in his absence by the person in charge. As he stood watching the watering his senses were stimulated and he was moved to expression ⁴ :—

The crackling of fibres of the palm-leaves resembled (Tawīl).
the sound of saddles of *mays*-wood on strong camels,
and the palms are laden so heavy with foliage
they look bent like an old man of the 'Ajāmīs.
And the trunk whose dry veins thou waterest
with water neglects not to benefit the branches.

On one occasion he entered to as-Saffāh when Ishāq b. Muslim al-'Uqaili was also present. Ishāq had proved his loyalty to the Umayyads ; on behalf of Hishām he had raided and taken in 120 H. the strongholds of Tūmānshāh and ravaged his territory⁵ ; in 126 H. Marwān b. Muḥammad sent him to the defence of the Caucasian frontier against the Turkomans, when he himself set out to assert against Ibrāhīm b. al-Walid his claim to the throne at Damascus ; he was then head of the

¹ *Agh.*, XVIII, 146.

² *Ibid.*, 147.

³ *Ibid.*, 148.

⁴ *Ibid.*, 144-5.

⁵ *Tab.*, II, 1635.

tribe Qays¹; in 128 H. he was in charge of the left division of Marwān II's army against aḍ-Ḍaḥḥak, the rival Khalifah set up by the Khawārij, who was killed at that time in the battle at Kafartūthā²; in 133 H. a large army of Syrians besieged Harran, and as-Saffāḥ dispatched his brother Abū Ja'far to engage with them, who with some difficulty defeated them; but Ishāq held Sumaisāt for seven months against Abū Ja'far, and the siege was only raised after peace-negotiations initiated by Ishāq had been ratified by as-Saffāḥ. Ishāq held faithfully by his Ūmayyad patrons till he knew for certain that the curtain had rung down finally on the last scene of their drama.³ Apparently as-Saffāḥ had learned to esteem him, for he attached him to himself and retained him as an intimate friend; in 145 H. he was still in possession of his royal patron's confidence.⁴

Abū Nukhailah recited to them a long panegyric on al-Manṣūr in which he stated:—

till when the executors gathered troops (Rajaz).
and a gem arose from the pure gold of the Prophet
and from the Banu'l-'Abbās a small *nab'*-tree,⁵
whose growth good origin and descent promoted,

and spoke of the conflict which determined the fate of the Ūmayyads:

there remained not of Marwān an eye to see,⁶
neither distant one, nor people present;

and the selection of Anbār for a capital, in contradistinction to the desolation that befell the cities of Hims, Tadmor and Wasit.⁶ Ishāq's resentment, for no explicit reason, was stirred at the references to the Marwanids and he declared that he had heard him utter in the audience-rooms of the Ūmayyad Banū Marwān still more objectionable things about the Abbasids, and denounced him as lacking in loyalty, fidelity and nobility. as-Saffāḥ's face now showed displeasure and he left the poet unrewarded.

The record of his years between the time of as-Saffāḥ and 147 H., 764, when al-Mahdi became heir-apparent, seems to fail entirely, certainly as regards his appearance at court; in the latter year, and apparently not before for he was a stranger then to al-Manṣūr, he came to the court. The date of his advent is certain, but not its manner.

Through his poetry he probably formed acquaintance with al-Qa'qā' b. Ḍirār,⁷ who had been appointed to command of

¹ Tab., II, 1871-2.

² *Ibid.*, 1939; Yāqūt, IV, 287; Well. tr., 392.

³ Tab., III, 57-8.

⁵ *Agh.*, XVIII, 149-150.

⁷ See *inf.*, p. 66.

⁴ *Ibid.*, 281.

⁶ Tab., II, 1893.

the *Shurtah* (gendarmerie) in Kufah by 'Īsā b. Mūsā and held the post from at any rate 141 H. till 147 H.¹ In some year during this period there came drought and dearth. Abū Nukhailah, by this time well-advanced in years, with his two sons and two servants, made his way to al-Qa'qā' and eulogized him, and in return was housed and fed, and acknowledged the hospitality thus :—

There ceased not among us four bowls for two months (*Rajaz*).
like camels driven off, and again returning—
my two servants, and two sons, and an old man
who stooped as stands the laden camel up.²

Then indigestion supervened, on account, as he alleged before his host, of the richness of the food and the want of wine :—

Day-shade and night-shelter both do know (*Rajaz*).
that with al-Qa'qā' I'm all I could desire ;
when the table arrives I am given
dainties by which I am not nourished ;
I have power, am asked to intercede and guard
as were I one appointed to hold office ;
and were I to desire what I might be given.
I would not increase aught more than I get.
Son of a house of which other houses fall short,
stop, for I am entertained beyond hospitality ;
date-juice can not commended be above my wine,
nor water sweet and colder grown overnight ;
but I am made appear among the people,
a *raṭl* of dilute date-wine I'm given to drink ;
stiff, when I've drunk it, I'm asked to recite.

There are three forms of the narrative connected with his appearance at the court of al-Manṣūr, at al-Hāshimīyyah apparently.

(a) A story is told of Sulaimān b. 'Abdi'llāh, the *Rāwī*, that once when he was on his way to al-Manṣūr, who by that time was minded to replace 'Īsā b. Mūsā as heir-apparent by al-Mahdī, he met between Hīrah and Kufah our poet, with his two sons and a servant, who were carrying his store ; presumably the whole party was en route for the court also. Sulaimān learned from him that he had been staying with al-Qa'qā' b. Ma'bad,³ and had there composed poetry connected with al-Manṣūr's resolve regarding the apparenecy, and his host had thereupon asked him to transfer himself elsewhere lest it should precipitate the displeasure of 'Īsā, whose protégée he was. Sulaimān then arranged for his hospitality and informed al-Manṣūr about the poem, and when the day arrived for taking

¹ Tab., III, 131, 347.

² *Agh.*, XVIII, 149.

³ He is al-Qa'qā' b. Ḍirār b. Ma'bad ; see *sup.*, p. 65.

the oath to al-Mahdī (147 H.) he went to al-Manṣūr along with Abū Nukhailah, who there recited his *urjūzah* in *dāl*, in presence of those assembled, and was duly rewarded. The narrative is practically the same in both at-Ṭabarī and the *Aghānī*.¹

(b) Abū Nukhailah is recorded to have stated that he came to al-Manṣūr and tarried at his gate seeking admission. One day ‘Abdu’llāh b. ar-Rabī‘ al-Ḥārithī, who in 146 H. had been removed from the governorship of Madinah and was now at court, suggested to him that a time like this, when al-Manṣūr had in mind the replacement of ‘Īsā by al-Mahdī, would be a favourable one in which to stimulate him to such action and remunerative; he thereupon composed the poem that follows. The narrative in both cases is again practically the same; the poetical passages however differ in content and phrasing:—

What is it spite of distance is come to thee, (*Rajaz*).
or what at whose memory thy tears flow,
for thou hast wept—what made thee weep ?²

The lines are stated in the *Aghānī* to occur in an *urjūzah*; it is quoted at greater length by at-Ṭabarī; the *rajaz* lines at p. 61 *sup.*³ also belong here. As given by at-Ṭabarī the poem is:—

Lo thou, ‘Abdu’llāh,⁴ art worthy thereof,
the *khilāfat* of God which He gave thee;
He singled thee, singled thee out with this;
and we have seen for a time thy father,
and now we see thee in possession of it,
and we are of such and our love is for thee,
yea, and we sue for protection unto thee.
Stay thy support on Muḥammad,⁵ for thy son
will suffice wherein thou dost charge him,
and its best guard is thy nearest one.
And I have sped with foot and haunches,
and have woven till I find nought to weave,
and coursed around in this, that, and yon,
but all I’ve composed save concerning thee
is false, and this discredits all other.

According to the *Aghānī* he recited the poem to al-Manṣūr, who rewarded him and warned him of possible vindictive machinations on the part of ‘Īsā.⁶

(c) He composed also his well-known *urjūzah* in *dāl*,⁷ whose contents and text differ greatly in at-Ṭabarī and the *Aghānī*; according to the latter the passage on p. 57 *sup.* should be prefixed to the following, which is reproduced from at-Ṭabarī:—

¹ Tab., III, 348; *Agh.*, XVIII, 150.

³ *Ibid.*, 143; cf. Tab., III, 347.

⁵ I.e. al-Mahdī.

⁷ Tab., III, 347; *Agh.*, XVIII, 151.

² *Agh.*, XVIII, 152.

⁴ I.e. al-Manṣūr.

⁶ *Agh.*, XVIII, 152.

Unto the Chief of the Believing betake thee,
 take thy way to the foaming sea of seas,
 thou art he, O son of the namesake of Aḥmad,¹
 and scion of the lofty house of the Arabs,
 nay more, O trusted of the Only One, the Eternal,
 he to whom the Lord of the Mosque gave charge !
 Yestreen its heir-apparent with happy omen
 was 'Īsā, then he made it over to Muḥammad² ;
 before 'Īsā it passed from one familiar place to another,
 so it was being delivered from hand to hand
 among you, and is staying on and waxing in power ;
 and we are content with this beardless youth.
 Nay, we had left off but we have borne no witness,
 and the pact has not yet been ratified ;
 and did we hear cries raised ; ' Come to our help ! '
 we would hasten as with the tread of thirsty herd ;
 so speed with the oath of allegiance to the massed host,
 who will depart this self-same day or at morn ;
 he is full-grown, and none are withholding ;
 he will increase what thou wilt.—increase him, he will
 increase ;
 and enrobe him from thee with a robe he will don,
 the robe of the surpassing and garlanded ;
 it may be told of them they seem to have gone back—
 but had they done so, yet would they not refuse,
 though they'd been travelling some time through desert on
 desert
 and the time had arrived for their going to water ;
 for the removal of the erring and corrupt is due ;
 God said to them : ' Come and be rightly guided ',
 and they have alighted in the covenant-place,
 and their quick nature is the best of all.
 He never attacked the meanness of envious souls
 with a chieftain so strong, mightily enforced.
 When they go to strike fire with unyielding fire-stick,
 they will be tried by one of established power, and firm,
 who increases in caution against threat.
 With alternate leniency and anger
 hold a stout sword, which will eat through any file !

Abū Nukhailah is reported to have stated that this *rajaz*-poem
 in *dāl* was recited publicly and was carried on the lips of the
 masses and the classes,³ till at length it reached al-Manṣūr,
 who admired it and enquired about the composer and sent for
 him, and had him read it through ; 'Īsā was present seated
 at al-Manṣūr's right hand, and heard it. When the poet came

¹ I.e. the Prophet.

³ Tab., III, 350 ; Agh., XVIII, 151.

² I.e. al-Mahdī.

out, 'Aqqāl b. Shabbah approached and tapped him on the shoulder and said : If the matter goes through to its conclusion, you will be fortunate ; but if not, then seek a burrow underground, or a ladder to scale the sky. Whereupon the poet is stated to have remarked :—

It hangs in its hanging-place, and the locusts creak.¹

It is difficult, if not impossible, to decide as to the historical course of events, but there is perhaps a better *prima facie* case for (b) ; (c) may have been composed very soon after.

Abū Nukhailah's lucky star might now have been thought to be in the ascendant, but it is related that al-Manṣūr himself warned him of the danger he stood in from 'Īsā, who did seek and take early revenge on this the humbler agent of the mischief done him. The poet fled towards Khurasan, but 'Īsā sent a *mawlā*, al-Qaṭarī, in pursuit of him, who overtook him on the way thither, and killed him and flayed his face, and cast his body to the vultures.² In aṭ-Ṭabarī one account adds the little piece of detail that al-Manṣūr wrote to Rāy about the reward for him, and that Abū Nukhailah received it there, and as he carried it on his way thence was killed.³

Satire was an arrow in his quiver ; Abu'l-Abrash praised God that Abū Nukhailah, whose aim was more accurate than his own and had wounded him, was now unable to harass him further.⁴ He could, and frequently did, make effective use of this weapon, but as a rule he moved with life's surface-currents, and was not stirred deep within.

His wit was ready, but in alignment with the far from delicate expressiveness his age indulged in. The salacious jest above-stairs and below has a perpetual vogue, secured for it probably as much by the confidential nature of its communication as by its wit, and Abū Nukhailah did not always render obeisance to the proprieties.⁵

He maintained a prominent position as a poet over many years until his death ; for this he owed little or nothing to birth ; something to his early experience among the tribes ; and much to his success with panegyrics, which demands a considerable measure of the graceful art of flattery. He made use of several verse-forms, but *rajaz* was pre-eminently his favourite, and certainly his happiest, medium of expression. This simplest of metrical forms is ancient, but the poem utilizing it only came into vogue in this post-classical period. Mere persistence may only be sign of conservatism and witness to the slowness of death in survivals. But it is necessary to account for the efflorescence

¹ A proverbial expression signifying that it was now too late for action ; Bei., I, 315 ; *Agh.*, XVIII, 151 ; Lane's *Lex.*, s.v. *'aliqa and jundub*.

² *Agh.*, XVIII, 152.

³ Tab., III, 350.

⁴ *Agh.*, XVIII, 152.

⁵ *Ibid.*, 143, 147, 148.

of poetry in this verse-form during a large portion of these two dynastic periods. It is rough-hewn ; the force of words has more attention than their setting ; and realism, not impressionism, is their characteristic.

We should probably seek for the explanation of this efflorescence of a primitive form in the temper of the age, or rather in its distemper. The old note of bravado (*hamāsah*) and brag (*fakhr*) is less and less heard in the land, nor is there the same unstudied tone in the elegy (*marthiyah*). The composure of the desert that was punctuated at intervals by enterprises that stirred the blood, such as the raid, blood-feud, and the vendetta, and the clandestine amour, is now disturbed over long intervals by prosaic dialectic of the intellect ; romance is a memory, not an experience. Conditions have so changed too that the monarch's pleasure and not public opinion is the touchstone for the time of the poet's merit. There was still in Iraq universal argument ; political restlessness, due in great measure to the aggressiveness of tribal nature ; human life itself had still too much martial value and was not allowed much consolidating influence ; it was an age neither of one dominant authority nor of an amalgamating national emergency ; there was uncertainty and unrest ; the spirit of man stood without idealism timidly before conditions unfavourable to creative art ; consequently we find no great poetry in this period of mental agitation.

Abu's-Simṭ Marwān b. Abī Ḥafṣah—A Post-classical Arab Poet.

By A. H. HARLEY.

In the pagan times of the Arabs, i.e. before the advent of the Prophet, oral records were pretty faithfully preserved in the memories of the tribesmen, especially by the *nassābs* (genealogists; sennachies) among them. But the coming of Islam marks an era of change, and its conquests necessarily so. For half-a-century from this time tribal Arabia's comparative isolation of long centuries was violated, and her two ancient cities of Makkah and Madinah held a dominant position, till the territorial and riverine zone from Damascus to the Persian Gulf became the axis round which the wide Muslim world revolved. Far-flung frontiers and busy communications extended interests beyond the former confines of the peninsula proper, and complexity entered into social relationships.

The spoil of Islam's foreign conquests included large numbers of captives, and as many of these became incorporated in one manner or another into the population the former domestic conditions could not remain in their integrity. From out such stock went forth poets, singers, instrumentalists; when they achieved fame their lineage was to seek, and it was not always certain. There is some dubiety about this Abu's-Simṭ (or Abu'l Hindām)¹ Marwān's forbears. It is stated that Abū Ḥafṣah was the *kunyah*, or to-name, of his great-grandfather Yazīd²; Ibn Khallikān attaches it also as such to Marwan's father Sulaimān. Yazīd is stated to have been a Jew, or a Jewish physician, who professed Islam to 'Uthman b. 'Affān, or to Marwān b. al-Ḥakam. A remoter Jewish connection has been attributed to him by the people of Madinah, who declared him to be a *mawlā*, or slave, of as-Samau'al b. 'Ādiyah, a Jew of Taimā', near to Madinah, who is proverbial among the Arabs because of his fidelity to the royal fugitive poet Imru'u'l-Qays.³

His family however claimed for him another connection, and asserted that he had been taken captive at Iṣṭakhr, in Persia, probably therefore about 22 H., 643, or early in the *khilāfat* of 'Uthman b. 'Affān (r. 23-35 H.), and that 'Uthman purchased him as a slave and presented him to his staunch supporter

¹ Ibn Khallikān, *Wafayāt* . . . , II, 117 (ed. Bulaq, 1299 H.), and tr. de Slane, III, 342.

² *K. al-Aghānī*; IX, 34 (ed. Egypt, 1323 H.).

³ *Ibid.*, 35.

Marwān b. al-Hakam, to whom he closely attached himself, and by whose side he fought on *Yawmu'd-Dār* (the Day of the House), viz. the house of the Khalifah 'Uthmān, in which he was besieged for about two months by malcontent subjects, and there assassinated. When his master Marwān was wounded on that occasion, Abū Ḥafṣah carried him beyond reach of danger to the house of a woman of Banū 'Anazah, and there tended him till he recovered. As a token of gratitude his master granted him his liberty, and made over to him a woman who had borne to himself a daughter, Ḥafṣah by name; hence the *kunyah* Abū Ḥafṣah, which would not indicate in these circumstances blood-relationship.¹

He stood side by side with him later in the engagement known as the Battle of the Camel, 36 H., 656, when 'Alī b. Abī Ṭālib triumphed over the supporters of his formidable opponents az-Zubair and Ṭalḥah, who both perished at that time, and 'Ā'ishah, a widow of the Prophet, who effected her escape; and also at Marj Rāhiṭ, 64 H., 684, where aḍ-Ḍaḥḥāk, fighting for 'Abdu'llāh b. az-Zubair against the new ruler at Damascus, Marwān b. Al-Hakam, lost his life.²

There is also a tradition of his having been sold, or having sold himself, into servitude because of hard times.² This much at least seems sure concerning him that he was associated in some way with Marwān b. al-Hakam.

He is credited on good authority with the gift of poetical expression; these lines connected with the *Yawmu'd-Dār* are attributed to him:

I said not that *Day of the House* to my folk : [Ṭawīl.]
 'Make peace', nor preferred life to being slain;
 but I said to them: 'Contend with your swords,
 which are falling short of the foe's full-grown.

And these also, but in a different connection or setting:

I am not one to block the way when there is [Rajaz.]
 crowding;
 on those who drink at the reservoirs of mischief
 I keep repeating attack upon attack.²

The tone is that of *ḥamāsah* (bravery, bravado) characteristic of the pre-Islamic period known as the *Jāhiliyyah*.

His son Yahyā enjoyed a reputation for a generosity typical of exemplary tribal hospitality. The poet Jarir, ever memorable for his long and severe crossing of swords in verse with al-Farazdaq and al-Akḥṭal, addressed to his own son Bilāl words of old-time courtesy regarding the liberality of Yahyā's nature:

¹ *Ibid.*, 34.

² *Ibid.*, 35.

Wouldst have provision and comrade other [Tawīl.]
than Yaḥyā ?

Forsooth excellent provision is Yaḥyā for the
traveller,
and the strong-cheeked camel is not safe from
his sword's blow,
when they have consumed their stores or little
is in the sacks.¹

'Abdu'l-Malik b. Marwān (r. 65–86 H., 685–705) apparently valued his services very highly, and esteemed marriage with him as honourable as with his own son Sulaimān. Yaḥyā paid due homage to his successor in the royal chair, al-Walīd, and congratulated him on his accession, and extended sympathy to him in his bereavement :

Fate leaves no single one behind [Kāmil.]
that carrieth weapons or shield ;
if a creature could escape fate,
the Khalifah had escaped it ;
pulpits mourned the day he died—yea,
they mourned the loss of their able one.
When Walīd succeeding mounted them
they said : ' Son and Equal ! ', and were quiet ;
had some other laid hand on them,
they had spurned and cast him from them.¹

The circumstances are all changed, but the voice resembles that of our poet Marwān when he congratulates Mūsā al-Hādī on his accession and laments al-Mahdī :

In every town the graves are feeling proud [Tawīl.]
of the grave of the Chief of the Believing ;
were they not in quiet with his son in his stead,
the pulpits would not cease mourning him.²

According to one tradition he sued for wives for his sons unto a grandson of the famous Qays b. 'Āsim, al-Minqarī, who had been a chief of Banū Sa'd in his day. He pled his cause successfully, but al-Qalāḥ b. Ḥazn, al-Minqarī, felt his gorge rise at a union with a family so spurious in origin and protested in sarcastic lines. Yaḥyā replied in verses replete with a righteous man's indignant scorn :—

Yea, God hath shamed al-Qalāḥ, and his women [Tawīl.]
by the well—at their ill-smell dogs grow thirsty ;
we married the daughters of the chief Qays b.
'Āsim—
and purposely turned from those of Banū Ḥazn—
a father better than thy father in origin,
a more auspicious medium and of higher worth.³

¹ *Ibid.*, 36.

² *Ibid.*, 45.

³ *Ibid.*, 36-7.

The snubbed of one generation may produce a snob in the next—such is the irony in circumstances, and a fact concomitant with growth and survival. Once union with Yahyā b. Abī Ḥafṣah's line was scorned; now the *ʿirṇīn* or upper part of the nose of his grandson Marwān was big with pride of birth; when in Madinah on one occasion he received a letter with the news that a woman of his household had married into a family, the Banū Maṭar, relationship with whom he did not approve, and he thereupon indited the following to her brother :

Hadst thou been like Yahyā with his womenfolk, [*Basīṭ.*]
 thou hadst not chosen a stallion with Maṭar for
 sire ;
 fine pedigree steeds thou hadst to manage for—
 but didst ruin them—with white legs and head-
 blaze.
 I'm told Khawlah said the day he wed her :
 Long I've expected this shame from you !¹

But the facts here are at variance with those given by Ibn Qutaibah, according to whom Yahyā married Khawlah, and the last two *bayts* above are the utterance of al-Qalāḥ, and not of Marwān, Yahyā's grandson.²

His loyalty to the Umayyads endured apparently to the end of his life ; when Yazīd b. al-Muhallab rebelled against Yazīd II, Marwān regretted that al-Ḥajjāj, the efficient administrator of the Two Iraqs on behalf of the Umayyads, who on account of his resoluteness however has won undying obloquy, was no longer alive to take the field against him.³

He deplores the fact that a certain governor of Yamamah, Sufyān b. ʿAmr, had rejected his advice :

Ibn ʿAmr spurned me when I gave him counsel— [*Basīṭ.*]
 and had I prevailed, his foot had not slipped
 with him ;
 had I blown on charcoal, my fire had blazed,
 but the ashes of his state had powdered.⁴

There is obvious here much force of expression, and the concrete is not yet imaged in tropes.

Of his son Sulaimān there was evidently nothing for the scribe of achievements in peace or war to record. Ibn Khallikān has given him the *kunyah* of Abū Ḥafṣah,⁵ and so its association with Marwān becomes at once explicable.

According to this same authority our poet was born in 150 H., 723-4, and died in 181 or 182 H.⁶ 797 or 798, at Baghdad :

¹ *Ibid.*, 44.

² *K. ash-Shiʿr* . . . , 178 (ed. Eg., 1332 H.).

³ *Agh.*, IX, 37.

⁴ *Ibid.*, 37.

⁵ *O.C.*, II, 117.

⁶ *Ibid.*, Yāfiʿi, *Mirʿāt* . . . , I, 389 (ed. Hyderabad) : cf. *infra*, p. 86.

he is also herein stated to have been a native of Yamamah, the long-important Central Arabian province, which at this time was administered from Madinah. A family-connection with it apparently existed or was formed as early as the time of Mu'āwiyā's reign (r. 40–60 H., 661–680), for Marwān b. al-Hakam, his Governor at Madinah, sent his henchman Abū Ḥafṣah there to collect her revenues, and incidentally the latter entered into matrimony with a woman of that region.¹ Its important town of Hajr is mentioned several times in connection with the family, and all Marwān's outgoings appear to have been from Yamamah.

The author of the *Aghānī* states that he has quoted verses by Yaḥyā at some length or with some variety on the psychological ground that the poetical antecedents of Marwān might be made known. Ibn Khallikān has been at some pains to establish Marwān's poetic faculty as an hereditary gift. On the authority of a grandson, Marwān b. Abi'l-Junūb, known as Marwān *al-Aṣghar* to distinguish him from our poet, Marwān *al-Akbar*, it is stated that Abū Ḥafṣah's son Yaḥyā had for mother Laḥnā', daughter of Maimūn, one of the children of an-Nābighah, al-Ja'dī, a well-known poet born in the pagan age, who survived into the time of the Prophet and professed Islam. Through her this poetic strain entered the family¹; rather, as has been shown, it combined with one of considerable quality already there. al-Mubarrad (*d.* 285-6 H., 899), the famous philologist of the Basrah-School of grammarians and author of the important literary history *al-Kāmīl*, in the manner characteristic of these Arabian natural statisticians of rating and grading, placed this second among families having this hereditary talent.² A remark by 'Abdu'llāh, son of the al-Mu'tazz who reigned at the then Abbasid capital of Sāmarrā from 251–5 H., 865–9, supplies an unintended comment on this lineal communication of a talent. According to him the vein of poetry became exhausted in the fourth generation after Marwān. The prince 'Abdu'llāh recited a very poor poem by this great-grandson Mutawwaj, and likened the family's poetic talent to some water in a cauldron, which from being hot in the time of Marwān cooled with each generation till it chilled and froze.³

Marwān probably first obtained admission to the Umayyad court under the ægis of his paternal uncles; during an interview with al-Manṣūr much later he speaks of having been there with them in the reign of al-Walīd b. Yazīd (r. 125–5 H., 743-4), whom he describes as prepossessing and gifted, and some verses of whose composition he quotes.⁴ His talent in panegyric maintained him in favour at the Abbasid court, where he celebrated the praises of al-Manṣūr, al-Mahdī, al-Hādī and

¹ *Agh.*, IX, 35.

² I. Khall., II, 119.

³ Aṣ-Ṣūlī, *Kiṭābu'l-Awrāq, Aṣḥ'ār Awlad* . . . 117 (ed. J. H. Dunne).

⁴ *Agh.*, IX, 39.

Hārūnu'r-Rashīd, and last, but not least, of the great house of the Barmakids. But first he had to live down memory of his praises of the Umayyads, or atone for this attachment. The credentials he presented at the Abbasid court were his panegyrics enlivened with satirical strictures on the Alids.

But a more personal, and indeed a quite romantic, attachment sprang up between him and Ma'n b. Zā'idah, a one-time refugee from Abbasid vengeance who yet lived to become a profitable servant to them as a provincial governor. Ma'n enjoys a reputation for generosity¹ and probity of character; firmness also had a large place when necessary in his dealings with men. In a crowded gathering Marwān once said of him:—

I see the heart which yestreen loved prattling [Tawīl.]
women,

though long it had enjoyed the period of youth—²

.....
The foe withheld, not for safety from thee,
but that they saw nothing to want in thee³;
they saw one in his lair whom they'd tried, and
marked, nearby

his covert, place where some of them had been
downed and dragged²;

and he has no match when it distresses him
to see

towards his throat shining spears directed²;

two palms he has, with boon and bane,

for God refused they should but harm or aid.³

He had been a trusted officer of the Umayyads, and was officially attached to Yazīd b. 'Umar b. Hubairah, then Governor of the Two Iraqs. After the Abbasids came to power, al-Manṣūr, or Abū Ja'far as he then was, besieged Yazīd in Wasīṭ in 132 H. Ma'n displayed great bravery in support of his superior, and when the latter was put to death, he found it expedient to go into hiding for a price had been put on his head and diligent search was being made for him.⁴ He grew weather-beaten and altered in countenance from exposure to the sun. He stayed in concealment till the affray at al-Hashimiyyah, the town built by as-Saffāh and completed in 134 H., 752, near Kufah; on this occasion a band of religious zealots known as Rawandiyyah, from Khurasan, becoming exasperated with al-Manṣūr's refusal of divine honours, attacked him and his supporters.⁵ Ma'n issued forth in disguise by night from his hiding-place in the neighbourhood, and displayed great courage in the loyalist

¹ *Ibid.*, 41, 44.

² A. F. Rifā'i, *'Aṣru'l-Ma'mūn*, II, 294 (Cairo, 1346, 1927).

³ *Agh.*, IX, 44.

⁴ *Ibid.*, 40.

⁵ I. Athīr: *al-Kāmil*, V, 383 (ed. Tornberg).

He awaited an opportunity to find him alone, and then made him an offer for it and bought it from him, imposing on him the while a strict oath not to recite or claim it. The allegation may be true, but our poet had no need to draw at another's spring.

On his return, or perhaps on a return-visit, from the Yaman Ma'n received a popular welcome and ovation, which included a *qaṣidah* by Marwān. The official in due course called on al-Manṣūr, who enquired with displeasure why he had rewarded the composer so handsomely for his poem containing the *bayt* :—

Ma'n son of Zā'idah, through whom are increased [Kāmil.]
 Banū Shaibān from glory unto glory ;
 if days of deeds are counted, then are his days two—
 one of generosity and one of spearing.

He replied that the reward had not been for this composition, but another dealing with the day of al-Hashimiyah :—

Thou ceased not the day of Hāshimiyah to [Kāmil.]
 display
 thy sword in defence of the Khalīfah of God ;
 thou didst protect his realm, and wert his
 defence
 from blow of every Indian blade and spear.

al-Manṣūr blushed for his misgiving, but was not relieved in mind regarding the amount of the reward, whereon Ma'n exclaimed : But for fear of your thinking badly of it, I would put in his power the keys of the treasuries and make him free of them ! The less exuberant monarch observed with restraint : What a rare Arab of the desert ! How light to you is what bears heavily on other men and resolute persons !¹

Ma'n was transferred from the Yaman as Governor of Adharbaijan, and thence to Sijistan. In the latter province he was assassinated, in a year variously given as 151, 152, and 158 H., by some Kharijite sectarians. His death was widely mourned, and was evidently felt by Marwān as a personal loss, and not merely the removal of a beneficent patron. By no means the least among the trials of a Poet Laureate—not that Marwān was such, but only one of the poets most in prominence—is the popular expectation that he will produce verses to order on occasion. A similar sense of inevitability or convention exhausting the wings of poetic fancy's flight must pervade the panegyrist. Only personal relations with the subject, involving understanding and appreciation, can add piquancy to eulogy, poignancy to elegy. There can be nothing so jejune as the impersonal panegyric, full of platitudes ; it is a voice without timbre or resonance.

Ibn Khallikān informs us that the poets composed some fine elegies to the memory of this Maecenas of letters, and states that

¹ *Ibid.*, 41.

the following by Marwān ranks among the noblest and most beautiful poetry :—

Ma'n has passed on his way, and left behind a [*Wāfir.*]
name

for good traits will never perish or be acquired ;
it seemed the day Ma'n was stricken as had
the sun's majesty been cloked with gloom.

.....
Night seemed after Ma'n as if united
unto nights joined to it, so long it was !
Alas, my father, for thee such time as gifts
are made delusive hopes, and with excuses !
Alas, my father, for thee when orphans come
with matted hair, as had they a disease !
Alas, my father, for thee what time verses,
through loss of him praised in them, go amiss !
Alas, my father, for every tumult of war
because of which bearing women cast their child !
We stay on in Yamamah since we despair,
without any intention to leave it.¹

Some time after the sad event just mentioned Marwān entered with a number of poets, when the day came round for al-Mahdī's custom to be observed of allowing them one day's audition in the year, to this monarch and recited a panegyric on him. When the subject had enquired about and learned the name of the composer, jealousy apparently awoke in his breast, for he asked : Was it not you who said :

We stay on in Yamamah after Ma'n,
without intention to leave it,²
and we say : Whither travel after Ma'n,
seeing gifts are ceased, and there is none to give ?

Interpreting this last *bayt* literally he refused to consider a reward, and even bade him be ignominiously removed. When the next occasion of the annual audition came round, Marwān adroitly secured admission, and in his due order recited this *qaṣīdah*, whose *nasīb* opens with a pretty conceit :—

One came to visit thee by night—hail to her [*Kāmil.*]
vision !—

a fair one who blends coquetry with her
beauty ;
she led thy heart and it submitted, and her
like
leads hearts to loving and inclines them ; .

¹ *O.C.*, II, 145-6.

² *Cf.* I. Khall., II, 146.

it seemed as she came with fragrance of a
 garden ¹
 wherein the rains of Spring had poured their
 showers ;
 she passed the night asking in my dream, at
 the stop
 in the desert, of one unkempt, unbored by her
 quest ;
 amid men who lay asleep unheeding, being
 weary of the sharp night-march and its tedium,
 and the padding of whose clothes felt like
 Indian blades
 worn thin, which the smiths had neglected to
 polish ;
 they placed their cheeks by worn camels
 leaning sideways,
 complaining of wounds on their sides and
 fatigue :
 they sought the Chief of the Believing, and
 continued
 from morning till eve despite night-travelling ;
 they yearned unto thee, thirsting, and sped
 with haste
 traversing the desert's rugged grounds and
 sands ;
 following a fleet camel, whose briskness was
 shaking,
 though now lean-worn, her neck and the back
 of her head ;
 swift, now enveloped amid the hills, now
 cleaving them
 as cleaves restive beast, when affeared, their
 rugged heights ;
 hastening when the whip urges, as hastens
 bi-coloured ostrich, racing her young, because
 of the dark ;
 thin as a bow she comes to thee, but other
 times
 appears like a tower, filling her saddle and
 ropes.²

This exordium consisting of a short *naṣīb*, or love-passage, and a description of the trying conditions of his journey is true to the classical model of the *qaṣīdah* ; it merges into an apostrophe to the source of his hope and his sustainer in his undertaking, al-Mahdī. The inspired part of his poem is this exordium ; here is the voice of one who knows the desert. It is true that

the ideas expressed in it are in great part, perhaps entirely, hackneyed or conventionalized, yet one senses a freshness in their treatment; the composer is a man at the height of his power, not yet facing the sunset.

He proceeded amidst silence till he reached the lines :—

Can ye efface from heaven her stars
with your hands or screen her crescent moon,
or deny your Lord's word which Gabriel
delivered to the Prophet, and he declared ?

when it was noticed that al-Mahdī, who had been listening in an ecstasy of delight, had gradually edged off his 'prayer-rug on to the carpet; when the last line had been declaimed he rewarded the author at the rate of a thousand dirhams per *bayt* of the hundred *bayts*,—the first time, it is stated, so large a total had been given to a poet of the Abbasids.¹

The rulers of this dynasty were now in the transition period between Arab affinities and Persian predilections. They still could feel the tang of the desert, wide, changeless in its sands, changeless in its seasons save when Nature loosed her violence in lightning and cloud-burst, unsocial; but in this land of their adoption, Iraq, they were in contact with more volatile natures, seeking change and pushing out effort, and thought and feeling into the unknown, and were becoming increasingly susceptible to the sensuousness of rhythm sweet and impassioned; egotism whether in arbitrary or in diffident mood welcomed the panegyric. Both elements, the love of poetry and of praise, entered into the determination of their awards.

The above poem had apparently been already recited in the literary circle of Yūnus the Grammarian, or another, for it was a practice with Marwān to allow a year for composition, criticism and alteration of an ode before making it known to a wider public. Yūnus himself or perhaps the well-known poet and *rāwī* Khalaf, al-Aḥmar, esteemed it as surpassing in quality a certain poem of the renowned classic Maimūn b. Qays, al-A'shā.² Marwān was content to be placed near such a luminary, but had a sufficiently good conceit of himself to think he was not out-classed by any since the brilliant asterism containing Jarīr, al-Farazdaq and al-Akḥṭal.³

The narrative of its recitation to al-Mahdī has a parallel in an experience described by the same authority in connection with Hārūnū'r-Rashīd and Marwān. He entered into the presence with other poets and declaimed a *qasīdah* of panegyric, only to be asked the same question as in the previous case, and to be again ignominiously extruded on the same pretext, that gifts and giver

¹ *Agh.*, IX, 42; cf. a similar statement as to his reward in ar-Ruṣāfah (*ibid.*).

² *Ibid.*, 39, 40.

³ *Ibid.*, 43.

had perished with Ma'n. By adroitness of behaviour he obtained admission some days later and recited a poem in which he says :—

By thy life, I forget not on the morn at al- [Tawil.]
 Muḥaṣṣab¹
 the signal of Salmā with her dyed fingers,
 when the pilgrims had issued forth all but a
 few
 by various passages, group upon group.

He likewise rewarded him handsomely.² The parallelism is so striking that one may reasonably call in question the double event. His was evidently a personality round which stories gathered—they were so many that Ibn Kḥallikān, who loves to introduce narrative to brighten the long tale of his numerous biographical studies, has contented himself with but a few—and possibly jealousy or enmity made much play. It is to be hoped that the naïveté of the following remark is more humorous than its import true ; it has been said that when he entered into the presence of king or noble to declaim a eulogistic poem, this *bayt* was quoted against him and precluded all reward, and even a hearing :—

And we say : Whither travel after Ma'n
 seeing gifts are ceased, and there is none to give ?³

Stories of his meanness are many ; niggardliness, and not the frugality that might have been expected of a poet with verses to sell, was a leading characteristic, all the more remarkable because of the abundance which he possessed, and the record rewards he received for each *bayt* of his panegyrics, from the Abbasids. His conduct in this respect is contrasted with that of his contemporary Salm b. 'Amr, al-Khāsir,⁴ a gifted and versatile poet of Basrah, who was remunerated equally generously by al-Mahdī, but was a typical Bohemian, and his carefree abandon led to squandering and fixed on him the epithet of al-Khāsir (the loser).

It is stated that Marwān did not buy flesh except when a strong desire for it possessed him, and then he would order the head of an animal, not only because of its culinary possibilities, but because he knew the market-rate and his servant could neither cheat nor filch.

Age did not remove this infirmity of the mind, or certainly unsociable trait ; in the time of Hārūnū'r-Rashīd he purchased some flesh for half-a-dirham (c. threepence), and it was almost

¹ Name of the way between mountains between Makkah and Minā, so called from the many stones about ; also the place where pilgrims cast stones, at Minā.

² *Agh.*, IX, 42.

³ *O.C.*, II, 147.

⁴ *Agh.*, IX, 37.

finished cooking when an invitation arrived which he decided to accept ; he therefore returned the meat to the butcher, making allowance for deterioration in value of only a *dāniq* (c. one penny).¹

A story is told of how he sat and listened to a satirical poem on himself by al-Jinnī, whom he had probably offended by doubting his poetic ability :—

Meanness stays in al-'Ijlān day and night, [Tawīl.]
and in Marwān's house till the end of time ;
meanness ran seeking a place to cast her saddles,
and passed over mainland and sea ;
and when Marwān came, it tented with him
and said : We are pleased to stay till Resurrec-
tion !
Marwān has no jealousy concerning his wife,
but is jealous concerning the cooking-pot.²

But the incident, with its sequence in Marwān's pleasure and not resentment, is not convincing, all the more so as authorship of the last *bayt* is attributed elsewhere to a member of Banū Bakr b. Wā'il.³

His account of the night of his greatest fear yields a story of the uncanny : ' I went with a riding-party for an interview with (Hārūnū'r-) Rashīd, and we came to a region wild and desert, and night enveloped us ; we journeyed on across it, and became conscious only of a woman driving her camels behind us and urging them with calls—and lo, she was a ghoul ! And when the dawn grew bright she turned away from us with her possessions, and began saying :—

O star, morn is toward thee against me, [Rajaz.]
for I am not of morn, nor it of me.' ⁴

Mention has already been made of him in connection with al-Hādī's reign (r. 169-170 H.). at-Ṭabarī records further that Marwān entered the royal presence and recited :—

Were I immortalized after Imām Muḥammad's [Kāmil.]
passing, I would not rejoice in long survival.

He recalled in verse the bounteousness of al-Mahdī, and was given promise of a generous recompense, though not on a scale to rival that of his father. Fate however removed al-Hādī before fulfilment.⁵ But the *Afghānī* tells of an occasion on which he not only obtained for a panegyric money down, but by the exercise of a little tact had his name entered in the Civil List of

¹ *Ibid.*, 38.

⁴ *Ibid.*, 45.

² *Ibid.*, 44, 45.

⁵ *Ṭab.*, III, 594.

³ *Ibid.*, 38.

those days ; he had praised this monarch in a poem containing the *bayt* :—

The two days of his severity and largesse [Ṭawīl.]
are so like none knows which has more merit.¹

Hārūnū'r-Rashīd (r. 170–193 H.) succeeded to the throne. In 165 H. Marwān had already paid the latter, while still a prince, a tribute in verse. Hārūn was then the leader in the field and had made a victorious advance along the coast of the Bosphorus and forced Queen Irene to a truce of three years and the payment of a heavy indemnity.²

According to aṭ-Ṭabarī he liked poetry and its makers, and had a human weakness for panegyric, and was prepared to pay a high price for well-turned lines eulogising him. In 181 H., in which year he had again taken the field successfully against Irene, Marwān entered to him with these words of praise on his lips :—

Frontiers were closed by Hārūn and in affairs [Ṭawīl.]
of Muslims resolutions fast established.

This poem, of which twenty-two *bayts* are given by the great historian, is not one specially selected by writers on style as an exemplar, but it brought him a rich reward in money, robes, and Byzantine slaves.³

It was necessary, as well as politic, if one would hope for recognition at court, to preserve good relations with the influential house of the Barmakids. Khālīd b. Barmak had started this family on its splendid career by the close of the Umayyad period, when he espoused the Abbasid cause ; he was ably succeeded by his son Yaḥyā, who long bore a heavy part of the burden of empire, and once endured imprisonment for conscience sake,⁴ and when the years had taken full toll of his capacity and strength demitted office into the hands of his son al-Faḍl, who like him nobly lived and whose dismissal in 190 H., 805, inclined the empire towards its fall, and of another son, Ja'far, Hārūn's ill-starred favourite. Yaḥyā had recompensed Marwān so munificently for his eulogies that he could reprove him for his miserliness when report of it reached him : ' Your penuriousness is more evil in its effect on you than penury would be were you to fall into that state . . . '⁵

With al-Faḍl his relations were somewhat closer. In 176 H. while holding a provincial governorship the latter was sent to Dailam to deal with a very threatening movement led by Yaḥyā, the chief representative of the family of 'Alī b. Abī Ṭālib. He

¹ *Agh.*, IX, 38.

² *Tab.*, III, 505 ; *The Cal.*, 470-1 ; *Finlay. Hist. of the Byzantine Emp.*, Bk. I, Ch. 2.

³ *Tab.*, III, 741.

⁴ *The Cal.*, 474.

⁵ *Agh.*, IX, 38.

successfully negotiated with Yahyā and induced him to visit Baghdad, where however he was treacherously treated. Marwān praised al-Faḍl, who, it may be mentioned incidentally, had no part in the dishonour done to a too trusting foe :—

Thou didst win—may Barmakid hand not wither [Ṭawīl.]
 wherewith thou didst close the rent in Banū
 Hāshim.¹

In 178 H. al-Faḍl was appointed Governor of Khurasan ; Marwān obtained an audience of him in his camp before his departure and recited to him :—

Seest thou not generosity passed down [Ṭawīl.]
 from Adam till it reached al-Faḍl's hand ?
 When Abu'l-'Abbās'² sky became serene,
 what fine rain came to thee, and what heavy !
 When her child's hunger affrights the mother,
 she calls him by al-Faḍl's name and he bears up.
 Islam is quickened by thee—thou art honour
 to it ;
 thou art from folk whose young are mature.³

A splendid reward signified his appreciation of the poet's will to acknowledge and encourage, and the verses have a certain freshness in their colour-tone.

While in Khurasan he organized a militia half-a-million strong composed of 'Ajamīs (non-Arabs), and of this force he sent twenty thousand to Baghdad to be at the Emperor's disposal. Marwān celebrated the achievement in a poem containing the lines :—

al-Faḍl is none other than a bright star, [Basīṭ.]
 that sets not in battles when the others set ;
 guard of the realm of a folk of splendid portion,
 in whose gifts heritage placed power.⁴

In 178 H. he returned from Khurasan, and Hārūn and his court in full array went forth to bid him welcome. Marwān seems to have found freer and happier expression in his eulogium on this occasion :—

We praise Ibn Yahyā's restorer, and at his advent [Ṭawīl.]
 the birds fly to us with happy portent ;
 our eyes slept not till they beheld him,
 nor ceased to gather tears till he returned ;
 his horse and foot came to us at morn—
 proudest spectacle of courage and leadership ;
 he drove from Khurasan the foe as morn's glow
 drives the enveloping dark and it withdraws :

¹ Tab., III, 614 ; *The Cal.*, 479f.

³ Tab., III, 632.

² I.e., as-Saffāh.

⁴ *Ibid.*, III, 631.

he is back with us whose route was yesterday
in Merv, and men said : Our muster is dispersed !—
what time he cast down the lock of every wrong,
and with his pardon freed the captive chained ;
and spread without favour, but fairly, among
them

kind gifts continuing and repeated ;
and banished from them their frights at fears,
and seeking peace among them began and
achieved ;

and to their orphans of his bounty gave,
and kinder was than father, and more gracious ;
did men seek the bound of Fādī's generosity
and courage, it would be found farther than
the stars ;

Yahyā and Khālīd ascended, by aid
of al-Fādī, to each highest and noblest aim ;
he is gentle with them who obey the Khalīfah,
but gives sharp Indian blade rebel's blood to
drink ;

his swords abase hypocrisy and idolatry,
but to men of the Faith are everlasting honour ;
he acquired strength from allegiance to the
Elect,¹

who crowned his merit with friendship of the
Khalīfah,
namesake of the Prophet, who doth open and
close,

through whom God gives all grace and with-
holds ;

thou hast made free the Kābuli's hills,²

and left no place there for error's fires :

and led up the horse that trampled his
hordes—

slain and captive, routed and scattered ;

thy favour returned to Ibnu'l-Barm what time
he grieved, forsaken, seeing death, forlorn.³

Few families guiding a state or an empire's destiny have been
so long lauded for their deserts, and they are not a numerous
multitude who have so well become praise as several of the
members of the Barmakids.

Ibn Khallikān gives 181 or 182 H.⁴ as the year of Marwān's
death ; but in the *Aghānī* a certain person speaks of having seen
him, then a very old man, in Baghdad in the reign of Muḥammad
b. Zubaidah, al-Amin (r. 193–8 H., 808–813)⁵ ; and there is
evidence of his having survived beyond the year 182 H. in the

¹ I.e., the Prophet.

² Tab., III, 636.

³ *Ibid.*, 635–6.

⁴ O.C., II, 119 ; Yāfi'ī, I, 389.

⁵ *Agh.*, IX, 43.

statement by at-Tabarī that in 189 H. there was an exchange of prisoners of war between the Muslims and the Byzantines, and in connection with this incident Marwān composed :

By thee captives were freed for whom were built [*Tawil*.]
prisons wherein is no friend to visit them,
when freeing them baffled Muslims, who said :
Idolaters' prisons are their graves ! ¹

This much is certain that he lived to a ripe old age.

But this work also gives an account, at second-hand, from one Ṣāliḥ b. 'Atiyyah, al-Adjam, who alleged that he had wormed himself into the confidence of the poet and his household, and strangled him one day when he lay sick and for the time being was unattended. The reason was offence he had given to the perpetrator, who belonged to the party favouring the cause of 'Alī's descendants against the Abbasids. According to Ibn Khallikān Marwān's prospects at court had prospered not for the single cause of the merits of his poems, but also because he opposed the Alid interest.

Already in the time of al-Mahdī Marwān had stated that he had incurred the hostility of Ya'qūb b. Dā'ūd, a *Rāfiḍī*,² i.e. a member of the Shi'ah (Shiites), who reserve the right of succession to the Prophet for members of 'Alī's family. He had been imprisoned by al-Manṣūr as an adherent of that family, but had been forgiven by al-Mahdī, and raised within a short time to the highest honour in his gift. Enemies whispered suspicions into his patron's ear as to his undivided loyalty to the Abbasids.³ Marwān held him to be a *Rāfiḍī*, but whether he took active part in this denunciation of the favourite which led to his downfall and long confinement in a prison, is not stated. The occasion of Ya'qūb's enmity was Marwān's *bayt* supporting the Abbasid claim and cause :

How can there be—forsooth there cannot be ! [*Kāmīl*.]
to daughters' sons the heritage of uncles ? ⁴

These words were remembered against him and were a cause of provocation, but they certainly did not lead to his death immediately, for the earliest date given for that event is 181 H. It is related of Ja'far b. 'Affān, at-Ṭā'ī, the poet, that he replied to the above *bayt* in these terms :

Why cannot there be—forsooth there can be ! [*Kāmīl*.]
to daughters' sons heritage of uncles ?
A daughter has full-half one's property,
while the uncle is left without share ;
the freedman has no part in heritage,
but pays in fear of the tempered blade.

¹ Tab., III, 707.

² Orig. a member of a certain sect of them—see Lane's Lex. s.v. رافض.

³ *The Cal.*, 468.

⁴ *Agh.*, IX, 43, 46 ; Tab., III, 539.

Partisan feeling must have been running very high if Sāliḥ did actually proceed to this extremity, for there does not seem to have been any specially personal grievance. He was a *rāwī* or professional reciter of ancient poems and rather a 'sponger' on society. His appearance can have made little compromise with beauty, for when Di'bil, a satirical poet who for the mischief of his tongue was always a refugee, failed to obtain from him something he had need of, he found sufficient ill-looks to suggest the lines :

The best of what's in Sāliḥ is his face— [Sari'.]
 then judge of the hidden from the seen ;
 mine eye contemplates in him a form
 which indicates his father's whoring.¹

But the authenticity of this narrative of his murder and of the passages now to be considered is open to question. The statement that Marwān was a Jew emanates from 'Alī b. Muḥammad, an-Naufalī, who related it on his father's authority ; the stories of his meanness as exemplified in the contrast between his conduct and that of Salm, al-Khāsir, and in his buying only the heads of animals for his meals ; the allegation that he purchased a *qaṣīdah* from a Bāhili and utilized it in one of his best poems ; and now this narrative emanates from Aḥmad b. 'Ubaidi'llāh b. 'Ammār, who quotes them from the above *rāwī* an-Naufalī, who again quotes his father as authority. Aḥmad was a *rāwī* of little if any note ; as these narratives are all prejudicial to Marwān, it is doubtful whether any credence at all should be extended to his statements. It is possible that he gratuitously cited an-Naufalī, a witness whose credibility cannot be impugned on such *prima facie* grounds, for he is often quoted by a historian so renowned as at-Tabarī. Infallibility cannot of course be claimed for this type of historian, who conformably with his method gave his authorities for each statement in a chain depending from the original witness and sometimes relied on a weak link ; and as Ibn Khallikān has remarked : ' . . . anecdotes vary according to the different channels by which they are handed down '.² Yet comparison of such associates and estimation of statement according to probability afford the reader an opportunity of judging for himself of the merits of a case, and though the record is more tedious, yet the method may be safer on the whole than that of the modern biographer, who may misconstrue facts without supplying them and thereby affording the reader a chance of forming his own opinion.

His compositions fall into two categories, panegyric and elegy, two forms not entirely dissociate, for they have the recital of virtues in common. The notes of bravado (*ḥamāsah*) and

¹ *Agh.*, XVIII, 37, 46.

² *O.C.*, II, 147 ; tr. de Slane, III, 406.

brag (*fakhr*) are not heard in these post-classical poets who await auditions in kings' chambers. The ancient function of satire, to paralyse a tribal foe with invective, having gone, it is now no longer a communal, but a personal quarrel; Marwān had no such weapon in his quiver. Neither love nor wine roused his sensibilities, indeed were not allowed to, for parsimony sealed for him the channels of the exuberance of man's spirit. If he has not added to the gaiety of nations, he yet has said things worth saying and in a worthy way, and often praised with sincerity so that honour's head is higher raised; and in the gallery of fame, the remoter half admittedly, will be represented by his two odes of panegyric on al-Mahdi and Ma'n, and his elegy on the latter.

If sanction from outside his poetry were necessary for appraising him as a member of the front rank of the post-classicists, none would have more authentic claim to a hearing than Ibnu'l-A'rābi, to whose philological studies we owe a recension of a collection of ancient Arabic poetry, known as the *Mufaḍḍaliyyāt*, made by his stepfather, al-Mufaḍḍal. In connection with Marwān's poem containing the *bayt* :—

Maṭar's folk on battle-day are like
lions with cubs in the vale of Khaffān,

he is reported to have stated : Had he (Ma'n) given him all he possessed, he would not have paid him his due. One other great tribute he paid him,—he closed with him the list of Arabian poets whose diction is authoritative in matters of usage and taste, and recorded none after his.¹

Ibnu'l-Mu'tazz (247–296 H.), a poet and famous authority on style, has likewise waxed enthusiastic over this poem. In his *Kitābu'sh-Shu'arā'* he has declared that Marwān in this 'brilliant ode' in 'l' to Ma'n surpassed the poets of his time. Ibn Khallikān agreeing describes it as 'lawful magic, chaste in diction and meaning, and it is due to him that he be preferred to the poets of his age and others beside'.²

An adverse note of criticism is not wanting; it is attributed to another pre-eminent philologist, al-Aṣma'i, who is said to have remarked that Marwān was post-classical and had no knowledge of the literary language.³ The former part of the remark is historically accurate. The poets are classified as belonging to the pagan period; the Islamic, i.e. the period when Islam was first promulgated; and that of the *Muḥdathūn* or *Muwalladūn*, i.e. the post-classical. Al-Aṣma'i was a purist in linguistic matters, and drew his illustrations of correct and novel usage of words chiefly from the first of these periods. The second part of his remark would be destructive criticism; the two authorities for the statement are little known, but if it be

¹ *Agh.*, IX, 43.

² *O.C.*, II, 117.

³ *Agh.*, IX, 40.

accepted, then it would mean that the great philologist had been disappointed in the range of his vocabulary and freshness in the application of words to the expression of an idea or its *nuances*. When Marwān takes the classical ode as model he approaches as near it as any of the poets of the post-classical period, and probably none outstrips him. It was impossible for him to adhere closely to his pattern; the time-spirit had changed and with it conditions and tastes. There is a proverb attributed to 'Alī b. Abī Ṭālib which is truer to facts than we often care to admit :

الْفَاسُ بِرِصَانِهِمْ أَشْبَهُ مِنْهُمْ بِأَبَائِهِمْ

Its purport is that human beings have more affinity with their own generation than with any generation of their forefathers. It was natural therefore that al-Mahdi's son Ibrāhīm loved the music of his own age; he was an accomplished singer of its songs, and entered into competition with the renowned master of music Ishāq, al-Mauṣili. The poem of Marwān to al-Mahdi at p. 79 *supra* is one of the songs to which he was devoted¹ :

One came to visit thee by night—hail to her vision !

There enters too the philological inevitability. The desert Arab had hundreds of names for his camel, the most familiar to his eyes of all his possessions; many of these were epithets describing the male and the female in all stages of growth from the embryonic, in all conditions of serviceableness from dietetic to warlike, and in various other states. Time brought simplification in terminology by eliminating the unnecessary, or for the tongues of 'Ajamīs (non-Arabs) the difficult of pronunciation or understanding. Marwān's diction is readily intelligible, and he might well be regarded in this respect as a forerunner of his younger contemporary Abu'l-'Atāhiyyah, who conceived and applied a plain poetic diction for the plain man.

¹ aṣ-Ṣūlī. *O.C.*, 23.

The Child-world, and the Child of Araby.

By A. H. HARLEY.

When we hear a child cry, we realize not only that it has a voice, but that all down the ages childhood's voice must have been heard for its insistence or persistence, even if affection had always made mothers listen out or anticipate. And yet it is remarkable that the archives of literature have preserved so little of their prattle, or pranks, or of interest in them and for them. The invention of printing, among its general favours, brought them into some prominence; till then they had no concern with sciences or arts that the manuscripts might notice them; for though men, women and children probably spoke and acted with the like proportion of serious to humorous and to trivial as we ourselves, the labour and cost of committing matter to writing in a fair hand left the young no consideration: that it spared us the publication of much adult ephemeral effusion is some compensation and reason for gratitude.

It was not till the latter half of the seventeenth century that writers in England definitely set themselves to prepare books for children. There were lesson-books for them in existence before this time, in which injunctions as to manners and morals received due heed of care, a mode of treatment of them which lasted through most part of last century. A few precocious little persons among them would not fail to pry into volumes for grown-ups, and a writer in 1557 gave warning of the risk therein to them: 'Keep them from reading of feigned fables, vain fantasies and wanton stories and songs of love, which bring much mischief to youth'. There was little for them, or even about them. It has been stated by a writer in the *Times Literary Supplement* that about the beginning of the 19th century 'cheap little paper-covered chap-books were produced in large quantities. Many contain narrative poems of the "Cock Robin" order, rhyming versions of popular tales like "Tom Thumb", "Dick Whittington", "Jack the Giant Killer". But they were not intended for children, though doubtless devoured by them'.

Children had little notice in literature till an evangelist preserved those words which Jesus spake concerning childlikeness being a symbol of heavenly-mindedness. In graven record, or sculptured, or on canvas their face is rare, and their features those of their seniors on a slightly reduced scale, which gives to them an even more immobile and characterless expression than that of their parents; their very clothes were but replicas of

those of grown-ups. Their whole world was given them ready-made to fit into. Youth was a first apprenticeship to labour and manhood, not an expectant waking up from sleep, as when :—

The slow light of rising day
soft unseals the eyes of birds,
that chirrup a protest in dismay :
they were not taken by surprise ;

or a change over from dreaming to mystery and romance, over the coverlet and outside the room, and through the garden, out in the big space that opened into another, and one after other till the night closed down part of it. It was a quick phase and a short preparation, and not a big quarter of a long life, or rather a whole world and all of life as young eyes should see it. Even Shakespeare, before whom the learned, the thoughtful of all nations bow, makes us see love and laughter, and tragedy in a world that has no children.

A century ago the school was organized for discipline. The child was still the man in miniature, subordinate to the same rules of law and order ; indeed his was a stricter subordination, for a man could preside on his own bench and condone his own offences, but the child was tried as a man, by a man, and sentenced.

Two generations ago psychology became more of an experimental than an experiential science, and set itself to investigate the problem of the child being father of the man. And now there are numerous painstaking records concerning the child, and fortunately also many books of tales and verse written and illustrated specifically for him, and for him fairyland has been depicted in colour, and song, and romance and play.

Complaint has often been made, and is still rightly heard, that the appeal of many of these books is chiefly to grown-ups ; their understanding or appreciation lies outside the child-sphere. One reason for this is that intellect is at home in our world, while feeling is a stranger suspected or disliked. Feeling is the biggest factor in life's complexes. But it is youth's right. Religion, and melody, and dancing and poetry are all inspired by it ; they had their origin in the childhood of the world ; they belong to the child-part or phase of our nature, to which the poet-minstrel and the story-teller, now no longer with us, made appeal.

If this attitude and condition of things persisted in Europe so long, we can hardly expect anything different elsewhere. Some training to a standard there was, as for instance for young noble-men in archery in Persia, but there was no system embracing the child, or to be more explicit, there was no recognition of his play-instinct and interest. Few writers seem to have said anything on the subject, and perhaps none has surpassed in quality the little to which a renowned Persian gave expression,—the saintly al-Ghazālī (d. 504 H., 1111 A.D.), who pointed out

and led a way to a fuller faith, and made happiness a subject of research for the alchemy of the spiritual world, did not overlook the play-element in child-nature. In a short *Risālah* or *Essay on the Rearing of Children and Making them Familiar with Praiseworthy Qualities of Character*, he speaks with a Spartan firmness combined with a rationality often astonishingly modern, and a fair proportionment of the respective parts of children, parents, and pedagogues. He realizes the importance of activity and exercise for a portion of the day as a preventive of idleness. He would have the teacher, 'after the boy is gone out of school, permit him to play a nice game, to which he would turn for recreation from the fatigue of school, yet such that he would not be fatigued by play; for to prevent a boy from playing and require of him that he should study constantly will kill his heart and stultify his intelligence, and make life troublesome to him, so that he will seek some means of ridding himself of it altogether'. There is danger however for him in addiction to play, food, or other pleasure for the world is a place of passage, not of settlement.¹

In a *Risālah* ² by that famous writer on the natural sciences and the healing art Ibn Sinā (Avicenna; d. 428 H., 1073 A.D.) immediately preceding al-Ghazālī's in the work under reference there is no such recognition of the child as a little animal with a natural instinct for play. Hedonistic tendencies as a rule have little encouragement from these ancient monitors. One ought not of course to countenance the old non-conformist Abū 'Uḥaidah Ma'mar (he was a Khārījite); though a scholar and a grammarian, yet 'in repeating passages of the Koran or relating Traditions he made mistakes designedly: "For", said he, "grammar brings ill luck"!'³

When we are very, very young we must play, for play is instinctive, and social too. Arab boys and girls play games, some of them the same as those of the children of the Arab tribes fourteen hundred years before, and some the same as young folks play in other lands. For just as the tales and fables of these children of Nature are found in other parts of the world, and as the idioms of the dwellers in other continents occasionally astonish us by their similarity to our own, so the youth of the world share not only the play-instinct, but in some cases the same games actually or basically. There is a large stock of common good among the nations.

Childhood was not invariably happy in tribal Araby. There were childish ailments, and amulets were worn against their evil source—of these phylacteries the 'Errant Prince' Imru'u'l-Qays speaks in his *Mu'allaqah*-ode:

¹ *Madaniyyat al-'Arab* . . . , Md. Rushdī (Eg., 1329 H.): 121-2.

² *Ibid.*: 113.

³ *Wafayāt* . . . , Ibn Khallikān (Bulaq, 1299 H.): II, 141; tr. de Slane: III, 391.

And I diverted her thoughts from her little year-old
wearing amulets¹;

there was parental correction, and parental thwarting of desires ; rationing of stores, and thirst ; the long trail, and the attack ; hardships that mature or weaken, but shorten the days of youthfulness. Though sunlight is brave company, the night holds fears in sounds, and superstitions, and the bogeys the unthinking, unfeeling or impatient raise. A reflection of such a bogey we find in a line by al-Jumaih, who, in a poem of complaint that her tribe have intervened between his wife and him, states that sometimes she flies at him, at others to him away from danger :

If aught fearsome occur, she is like a smocked child
thou keepest checking with fright of the wolf.²

But joy quickly dispels sad thoughts or memories, the accidentals in youth's enterprising scheme of things. Of diversions there was not a natural plenitude ; they had to be sought chiefly in games. The *mal'ab* was a place of play or recreation outside the black tents of the settlement ; a poet al-Uryān b. Sahlah even makes its provision a distinctive characteristic of the generous owner of stocks and man of substance in contrasting him with a miserly one :

And I came to the abode of a sincere man, and round it
were the stalls of horses, and the play-place of the
young men.³

In this bit of ground the men had their archery with a ring-target, and other practice and contest, and hither the boys resorted and would naturally choose boys for partners or rivals ; but though the poetry is rather reticent, from inherited inability to give youth a place and with no forethought to conceal facts, the girls too had their pastimes there ; e.g. Dhu'r-Rummah in a reference to a young gazelle asleep speaks of it as :

Like a bracelet, cracked, of silver, found lying
on a playground where the girls of the tribe had played.⁴

The famous *Mu'allaqāt*, a collection of seven or, according to another tradition, ten selected odes, 'strung for ornament on the same chain of merit', or suspended and therefore set on high, contains several references to playthings. In the ode of 'Amr b. Kulthūm therein we read :—

As were swords twixt us and them
makhārīq in the hands of players.⁵

¹ *A Comm. on Ten Anc. Ar. Poems*, ed. Lyall (Cal., 1894) : b. 16.

² *al-Mufaḍḍalīyāt*, ed. Lyall (Gibb. Mem. Ser.) : I, p. 27, b. 6.

³ *al-Ḥamāsah*, Abū Tammām (ed. Freytag) : 712.

⁴ *Mufaḍ.*, I, 877, f.n., b. 51 ; *Dīw.*, ed. Macartney (G.M.S.) : 75, b. 19.

⁵ Ed. Lyall : b. 37.

This Arabic word (sing. *mikhrāq*) occurs also in a saying attributed to 'Alī b. Abī Tālib, son-in-law of the Prophet, who had a fine gift of expressiveness, to the effect that lightning is the *makhāriq* of the angels, which is explained as meaning that lightning 'is the instrument with which the angels chide and drive the clouds'.¹ The usual account of the *mikhrāq* is that it consists of a cloth, or it may be rags, twisted tight and held in the hand to strike with in boys' battles; these 'strikers' or 'twisters' cleave the air as they speed to strike a rival's pate, or collide with each other.

The reference in the following is taken by Lyall to be to such knotted handkerchiefs, who accepts the explanation of the scholiast:—

'Bakr approached in their defence, and we were not able to lay hold of them; they played with their swords as though they were a party (of boys) at play at night (with the knotted handkerchiefs)'.²

In a poem attributed in the *Mufaddaliyyāt*, the anthology of ancient Arabic poetry called after its compiler, al-Mufaddal (d. c. 169 H.) to al-Mumazzaq, but in another tradition to Yazīd b. al-Khaddhāq, who is writing an anticipatory account of his own death, the twisted cloth appears to be the only possible signification,—the scholiast here adds turbans to the list of such cloths:

'And they lifted me up and said—"What a man was he!" and they wrapped me in a winding sheet as though I were a folded napkin (with which children play)';

there is a variant reading in the second hemistich however which omits mention of the 'napkin' altogether.³

In a famous storehouse of information concerning ancient Arab days and ways, the *Ḥamāsah*, an anthology of poems compiled much later than their composition, by Abū Tammām, who died about 235 H., 850 A.D., we find an anonymous poet saying in praise of Banū Šuraim that there is none so splendid as they:

Or possessing more youths active in warfare,
leading in leadership, or leading themselves.⁴

'Active' has here been used to render *mikhrāq*. The scholiast, at-Tabrizī, in his commentary on this passage mentions the meaning of *mikhrāq* as striker, but adds that the term is also applied to a skin, or the like, which they inflate with air, and with which they strike one another. An inflated skin, or bladder would be a suitable rendering in some of the above passages.

¹ Lane's *Ar.-Eng. Lex.*: s.v. خرق.

² *Mufad.*: I, 716, b. 5.

³ *Ibid.*: I, 601, b. 3.

⁴ *Ham.*: 702.

The dictionaries supply yet another signification, also that of a means of striking, viz. a wooden toy-sword. Imru'ul-Qays says of a sword :

Many a gleaming blade, like a *mikhrāq*,
I've worn its edge and keenness on legs and napes.¹

In this verse it seems to denote the wooden sword used by boys in play. Localization of usage may yet be able to determine its significance, but sufficient here to note that the word has parallels in other lands for its application to a contest with knotted cloths, or inflated bladders, or toy-sword. The challenge and the tackle are a sound heard down all the ages.

KHUDHRŪF. In the most virile, and by general consensus, the best, of all the *Mu'allaqāt*, that of Imru'ul-Qays, we read this similitude of his horse :

Swift as a youngster's *khudhrūf*, which there has made
to go

the continued plying of his hands with a cord attached.²

Khudhrūf here is usually taken to be a spinning-top, or something that whirls round when the cord is released ; a deep humming or buzzing (*dawī*) accompanies its motion. The scholiast explains the term by a synonym *kharrārah*. In his *Diwān* Imru'ul-Qays again uses the word in speaking of a horse :

He overtook them, without fatigue, or second run—
he was moving like the holed *khudhrūf* of a youngster.³

In a poem of Tufail we read of a breed of horses fleet as the wolf loping back to his lair in the *ghadā*-bushes, and each horse :

Makes him who is mounted on his back taste
the shadows of *khadhārīf*, as he flashing speeds.⁴

This *bayt* means that as the *khudhrūf* revolves so swiftly as to be shadowless, so the rider is borne at such a pace that no shadow is cast,—no more than that of a *khudhrūf*. The scholiast in this case also explains by *kharrārah*, which might well have been apposite because of the sound that it made, such being apparently of a gurgling or rustling and intermittent nature. This synonym he gives a little later in the same poem in connection with the same word, and again in reference to his tribe's horses :

When it is said : ' Check them ! ', while they are straining
hard,
they are pulled up short together, like a youth's pierced
khudhrūf.⁵

The spinning-top is not an impossible meaning in these verses, but the figure seems more likely that of a circular piece of

¹ *Diwān*, ed. de Slane : p. 30, b. 15.

² Ed. Lyall : b. 59.

³ *Diw.* : 24, b. 41.

⁴ Ed. Krenkow (G.M.S.) : No. 1, b. 14.

⁵ *Ibid.* : b. 18.

leather, similar to the whirligig or 'saw', often merely the round lid of a small tin, with which children in the West play, making it rotate by means of a cord passed through two holes in the centre and then joined at its two ends and carried over the thumbs on each side of the saw; a slight rotating and stretching soon set it revolving.

DUWWĀMAH and FALKAH are terms used synonymously of the spinning-top. The former is appropriate in this respect that, when a toy is spinning fast, it seems as if it 'continues standing still'; it is asleep. The latter word signifies something spherical, and the whorl of a spindle. When wound round with string and thrown, it spins.

So far no reference has come to hand in which the top was 'whipped'. Much came in over the Syrian border, including even some of the drinking customs and associations found in Lesbos and Byzantium, and it would be a little surprising if boys did not whip their tops, for this was a practice found in Lesbos as early as 600 B.C.¹

The game of Tip-cat, or Cat and Bat, has spread its popularity among young people in many lands. It is known as *Ghōk-Chōb*, *Chalak-Masta*, in Persia; in Hindostan as *Gullī-Dandā*; to the Arabs as *Miqḷā'* (or *Miqḷā*) *Qulah*. *Miqḷā'* denotes the bat, or striking-instrument in the hand of the person in play. Labīd b. Rabī'ah makes use of the figure thus in regard to his she-camel:

Is she like that, or an onager, ill-made,
rough-handling the milkless she-asses as with a bat? ²

The poet at-Ṭimmāḥ employs it figuratively of one who drives or urges:

And they move on towards the water, there beguiling them
an ass braying and raging, a 'bat' for the wild asses.³

Amr b. Kulthūm utilized the 'Cat' to impress his figure:

And nought protects women in howdahs like a stroke
from which you see forearms flying like tip-cats.⁴

The game al-Bī'r (the Well), as described in *Arabia of the Wahhabis*,⁵ is probably the linear descendant of the ancient Arab game, and Tip-cat only a developed form of it.

BA'R, or BA'AR, is a game illustrative of universal boy's resourcefulness in providing his own amusement. The tribes had no toy-factory; toys were probably pretty crude, unless among these warrior-herdsmen or the refugees from tribes, or the brigands, or the vagrants there was one with the deft skill

¹ *Sappho*, A. Weigl: 82.

² *Delectus* . . . , Nöldeke: 102, b. 28.

³ *Dīw.*, ed. Krenknow: 107, b. 65.

⁴ *Mu'a.*, ed. Lyall: b. 90.

⁵ By J. St. J. Philby: 116.

in craftsmanship that calls forth youthful hero-worship. When fashioner and material failed, there was scope for ingenuity; hence presumably this game, to which was given the name for the dung of camels or other cloven-hoofed animals. 'Āmir b. at-Tufail refers to it in a verse in which he speaks disparagingly of enemy-tribes:

Bald, minute polls, and noses theirs
like dung a youth strings in the playground.¹

The reference here seems to be to a game like 'conkers', which boys in the West play by stringing one or more dried horse-chestnuts and wickling them stroke about against a similarly strung conker of a rival.

FI'ĀL, FIYĀL, FAYĀL, MU'FĀYALAH. The game thus variously known by forms from the same root is one requiring little more than the bare desert could provide, sand; earth was sometimes used instead. Arab lads of the desert heaped up sand or earth; then the *Mufā'il*, i.e. the person in play, secreted something in it, and divided it into two parts with his hand, and asked of one of the others in which portion it was concealed. If the answer proved right he won: if wrong the one in play said: Your opinion is at fault (*fāla*). Labīd b. Rabī'ah adapts the similitude of the game thus:

His forelegs cleave the shallow sands of ad-Dahnā',
like the player for a wager playing *fī'āl*.²

Ṭarafah makes use of the simile of its player:

Their prow doth cleave the mass of waters there
as parts *fī'āl*-player the earth with his hand.³

Apparently this game is also called BU'QAIRĀ. Tufail al-Ghanawī refers in a poem to a raid of his people on the tribe Ṭai' in which he says of his own kinsmen:

They remain staying around Mount Mutālī',
their sportsground like marks made by *buqairā*-player.⁴

His people exercised so much in the sportsground that their horses' hoofs dug into it and threw up hoof-marks like the heaps players made in the course of this game.

In the collection known as *al-Mufaddaliyyāt*, a poet al-Musayyab b. 'Alas describes his she-camel thus:—

Her forelegs move briskly because of her speeding, as were
she playing ball with the two hands of a player on a pitch.⁵

For player (*lā'ib*) there is a variant *māqil*, one who plays with a ball. The final expression, 'on a pitch', has been taken to

¹ *Dīw.*, ed. Lyall (G.M.S.): *Frug.* II, b. 2.

² *Delect.*: 102, b. 26.

³ *Mu'a.*, ed. Lyall: b. 5.

⁴ *Dīw.*: 22, b. 17.

⁵ *Mufad.*: I, 96, b. 13; II, 31, b. 13.

mean 'with a stick', a polo stick (*ṣaulajān*)¹—the Arabicized form of the Persian *chaugān*, 'a bat' or 'club', to the acceptance of which however there is more than the grammatical obstacle in the attached preposition.² But others understand a ball-game in which the ball is bounced with the hand: possibly it stands in collateral descent with the game of Racquets, a term which it has been suggested represents the Arabic *rāḥat*, the palm of the hand; the French name for the original form of the game is *Paume* (the palm of the hand).³

KHARĪJ, or KHARĀJ, was a guessing-game, in which the players called out 'Kharājī'. The person in play is said to have held something in his hand and called to the others: 'Elicit what is in my hand'. Or, Lane thinks, it may have been like the game *Morra* of ancient and modern Italy, known also in very remote time in Egypt, 'in which one of the players puts forth some, or all, of his fingers, and another is required to name instantly the number put forth, or to do the same'. The verse in which Abū Dhu'aib al-Hudhali has mentioned it along with *mikhrāq* in his reference to lightning is as follows:

I was wakeful because of it one evening, as were it
makhḥūrīq under which 'Kharāj' was being called out.⁴

UMBŪTHAH (انبوثة) was another form of guessing-game for children. In this case something was buried in the ground, and the person who was successful in locating it was declared the winner.

Men are often referred to as big children, for they play, and not always for exercise, or in the attempt to recreate the romance their yesterdays held, but for the love of it. A reference to some of their games and sports is therefore not out of place here, all the more so as some of these were pastimes common to both, 'big' children and little.

MAISIR made that appeal which a gamble always makes to human nature. Ten untipped and featherless arrows (*qidāḥ*) were shuffled in a bag or the hand of the holder; of these seven were winners, and entitled the drawers to portions of the camel slaughtered for the gamble.⁵

Horse-racing (RIHĀN) for a wager was a sport after the heart of lithe men with horse-flesh for ever famous by reason of the speed, stamina and appearance of the animals. The contest

¹ Lane's *Lex.*: s.v. *صولج* and *صوع*; see also Ibn Khall. (Eg.): I, 111: de Slane, I, 256.

² *Mufaḍ.*: I, 96, b. 13; II, 31, b. 13.

³ *Encyc. Brit.*: s.v. *Racquets*, f.n.

⁴ Lane's *Lex.*: s.v. *خروج*.

⁵ *The L. Poem of the Arabs*, by Shanfarā, tr. Redhouse: b. 32. Described by Lyall: *Diwān* of 'Āmir b. at-Tufail (G.M.S.), p. 103. See also *Qur'ān*: II, 219; V, 90-1.

between Dāḥis and Ghabrā', of 'Abs and Dhubyān, respectively, two brother-tribes, is a classic reference. Unfortunately tribal jealousy induced one side to play a knavish trick, and time, not tears or blood, removed the hate.¹ Riding JARID,² in which feats of horsemanship and lance-throwing as thrilling as any neck-risking deed could be, appears to be of Turkish cult.

In over the Iraq border from China or India came CHESS, and from Persia NARD, a species of trictrac or backgammon with apparently ossicles from animals' feet for dice (فَصّ ; كعب) originally; but these probably did not penetrate among the tribesmen.

A square-game called QIRQ, played with pebbles in interior squares, is mentioned in the *Kitāb al-Aghānī*.³ It is also known as SUDḌAR, which is taken to be an Arabicized form of the Persian *Sih Darah*.

A game Hadraq or Hadraj with pellets of camel-dung or stones placed in holes, now played in the Hijāz, and by slaves in Najd, has possibly an old-time representative. It is played, as described in *Arabia of the Wahhabis*,⁴ with eight or nine small cavities scooped out of the ground and some pebbles or pellets of camel-dung.

The throwing of the disc (*miṭaththah*), made of wood, in the sport TATHTH, found entrance probably at a late date; certainly there was neither a penthathlon contest, nor any event for the discobolus in a popular assembly.

FANZAJ was apparently a dance of the Nabataeans, dwellers since ancient time and agriculturalists in North-West Arabia, by the 'Old Spice Road'. The renowned writer in *rajaḥ*-metre, al-'Ajjāj, makes mention of it:

In the shelter of an *Artā*-tree and a curving dune,
like Nabataeans circling round playing *al-fanzaḥ*.⁵

¹ *K. al-Agh.*: XVI, 23, etc.

² *The Romance of Isabel Lady Burton*, W. H. Wilkins: 412. *Constantinople* . . . , R. Walsh: 44.

³ *Agh.*: IV, 51; *Rannāt* . . . (Bei.): I, 63.

⁴ *o.c.*, J. St. J. Philby: 117.

⁵ *Dūr.*, ed. Ahlwardt: p. 8, ll. 15-16.

**Some astronomical references from the Mahābhārata
and their significance.**

By P. C. SENGUPTA.

Our aim in the present paper is to discuss and interpret astronomically some of the time references in the *Mahābhārata*, collected from Books V–XIII. The work *Mahābhārata* has undergone many changes in the course of long ages that have elapsed since its beginning at the time of the Pāṇḍavas. The present compilation began about the time of the Maurya emperors. There are in it mention of the Buddhist monks and the Buddhists in several places.¹ Again one astronomical statement runs thus :—

First comes the day and then night, the months begin from the light half, *nakṣatras* begin with *Śravanā* and the seasons with winter.²

For 1931 A.D., the celestial longitude of *Śravanā* (*Altair*) was 300° 49' 7". According to the modern *Sūrya Siddhānta* the polar longitude of this star is 280°. ³ while Brahmagupta in his *Brāhmasphuṭa Siddhānta* quotes its earlier polar longitude as 278°. ⁴ Hence according to the former work, the star *Śravanā* itself marks the first point of the *nakṣatra*, and according to the latter, the *nakṣatra* begins at 2° ahead of the star. The *Mahābhārata* stanza quoted above shows that the winter solstitial colure passed through the star *Altair* (*Śravanā*) itself or through a point 2° ahead of it, as the season winter is always taken in Hindu astronomy to begin with the winter solstice. The passage indicates that winter began when the sun entered the *nakṣatra* *Śravanā*. It shows that the star *Altair* had at that time a

¹ Book I, Ch. 70 : लोकायतिकमुख्यैश्च समन्तादनुनादितम् ॥ 2889 of *Adi Parva* : Book VII, Ch. 45, St. 30, which runs thus : अथोदीत्याश्वाङ्गकामाग्राश्च शिशुान् धर्मानुपजौवन्ति ब्रह्मा । Also Book XII, Chapter 218, Stanza 31, etc., contains the Buddhist doctrines of rebirth. Asiatic Soc. Edn. of the *Mahābhārata*.

² अहः पूर्वं ततो रात्रिर्मासाः शुक्लादयः स्मृताः ।

अवषादीनि ऋक्षाणि ऋतवः शिशिरादयः ॥ ९ ॥

Asvamedha, Ch. 44, St. 2.

³ वैश्वान्तो अवषस्थितिः । *Sūrya Siddhānta*, VIII, 4.

⁴ मकरऽष्टमैः *Brāhmasphuṭa Siddhānta*, Ch. X, 3.

celestial longitude of 270° or 268° according to the *Brāhma-sphuṭa Siddhānta*. The present longitude of *Altair* may be taken at 301° nearly. The total shifting of that solstitial point has been now 31° , which indicates a lapse of time = 2,232 years. This means the year 297 B.C. If we accept Brahmagupta's statement for the position of this star, the date is pushed up to 441 B.C. Hence there is hardly any doubt that the *Mahābhārata* began to be compiled in its modern form from 400 to 300 B.C.¹ Before this there were known two books the *Bhārata* and the *Mahābhārata* as we find mention in the *Āśvalāyana Gṛhya Sūtra*.² The great epic, as we have it now, has swallowed up both the earlier works, and the oldest strata in it can be found with great difficulty.

THE TIME REFERENCES FROM THE MAHĀBHĀRATA.

We shall now try to set forth some of the time references as found in the present *Mahābhārata*, which we understand to be the oldest. In these references there is no mention of *tithis*. We have the mention of an *āmārāsyā* (not *amārasyā*) or the period of the moon's invisibility : in some places time is indicated by the moon's conjunction or nearness to certain stars.

(i) In the *Udyoga Parva* or Book V, Ch. 142, stanza 18, runs as follows :—

‘From the seventh day from to-day, the moon's period of invisibility will begin : so begin the battle in that, as the presiding deity of this new moon has been declared by the wise to be Indra.’³

This is taken from the speech of Kṛṣṇa to Karna at the end of his unsuccessful peace mission to the Kaurava Court. It means that before the Bhārata battle broke out there was a new moon near the star *Jyēṣṭhā* or *Antares* of which the presiding deity is Indra. This new moon marked the beginning of the synodic month of Agrahāyana. But the battle did not actually begin on the day of this new moon. For on the eve of the first day of the fight Vyāsa thus speaks to Dhṛtarāṣṭra :—

¹ Cf. S. B. Dīkṣita's *भारतीय ज्योतिःशास्त्र*, page 111, 2nd edition. He estimates the date at 450 B.C.

² “सुमन्तु-जैमिनि-वैशम्पायन-पैलस्तुत्रभाष्य-भारत-महाभारत-धर्मशास्त्राणां जाननि”

Āśvalāyana Gṛhya Sūtra, Ch. 3, K. 4, Sūtra 4.

³ सप्तमाद्यापि दिवसादामावास्या भविष्यति ।

संयामे युज्यतां तस्यां तां द्याऊः शक्रदेवताम् ॥ १८ ॥

Bk. V, Ch. 142, St. 18.

(ii) 'To-night I find the full moon at the *Kṛttikās* (*Pleiades*) lustreless, the moon became of a fire-like colour in a lotus-hued heaven.'¹

If there be a new moon at the star *Antares*, the next full moon cannot be at the star group *Pleiades*. At the mean rate the moon takes exactly 12 days 23 hours or about 13 days to pass from the star *Antares* to the star group *Pleiades*. The moon was about 13 days old and not full. Vyāsa by looking at such a moon thought it to be full. There are other references to show that the moon could not be full on the eve of the first day of the battle. On the 14th day of the battle the Rākṣasa hero Ghatotkaca was killed in the night fight. The contending armies were thoroughly tired and slept on the battlefield, and the fighting was resumed when the moon arose after three-quarters of the night were over. There was a truce declared at midnight between the armies till the rising of the moon at the request of Arjuna.² How and when the fight was resumed are described in the following way :—

(iii) 'Just as the sea is raised up and troubled by the rise of the moon so upraised was the sea of armies by the rise of the moon: then again began the battle, O King, of men wishing blessed life in the next world, for the destruction of men of this world.'³

As to the time when the fight was resumed we have the statement :—

(iv) 'The battle was resumed when only one-fourth of the night was left.'⁴

१ शालक्षं प्रभया क्षीनां पौर्णमासीं च कार्तिकीं ।
चन्द्रोद्भूदग्रिवर्णस्य पद्मवर्णे नभःस्थले ॥

Bhīṣma Parva or Bk. VI, Ch. 2, 23.

२ चर्द्धरात्रिः समाजज्ञे निद्रान्धानां विशेषतः ।
सर्वे ह्यासन्नित्वाद्याः क्षत्रिया दीनचेतसः ॥ १६ ॥
ते यथं यदि मन्यध्वसुपारमत सैनिकाः ।
निमीलयत चात्रैव रणभूमौ सुहृत्तकम् ॥ २० ॥

Droṇa, Ch. 185.

३ यथा चन्द्रोदयोद्भूतः क्षुभितः सागरोऽभवत् ।
तथा चन्द्रोदयोद्भूतः स बभूव वल्लार्षवः ॥ ५५ ॥
ततः प्रवृत्ते युद्धं पुनरेव विश्राम्यते ।
लोके लोकविनाशाय परलोकमभीक्षताम् ॥ ५६ ॥

Droṇa, Ch. 185.

४ त्रिभागमात्रशेषायां रात्र्यां युद्धमवर्तते ॥ १ ॥

Droṇa, Ch. 187, 1.

Thus the moon arose that night when one-fourth or sometime of the night was left, and the description of the moon was as follows :—

(v) 'Then the moon which was like the head of the bull of Mahādeva, like the bow of Cupid fully drawn out, as pleasant as the smile of a newly married wife, slowly began to spread her golden rays.'¹

It was a crescent moon with sharp horns that rose sometime before the sunrise, and was consequently about 27 days old. From this it is clear that the Bhārata battle was not begun either on the new moon day spoken of in reference (i) nor on the following full moon day and that she was really about 13 days old on the eve of the first day of the battle, though apparently she was nearly full. It was at best the *Anumati Paurṇamāsī* or the first night of the moon's apparent fullness.²

On the 18th day of the battle, Valadeva, Kṛṣṇa's half-brother, was present at the mace-duel between Duryodhana and Bhīma. He just returned from a tour of pilgrimage to the holy places, which had lasted 42 days. He says :—

(vi) 'Forty-one days have elapsed since I went out for this tour: I went out with the moon at *Pasyā* and have returned with the moon at *Śravaṇā*.'³

Hence on the day of the mace-duel, the moon was near to the star *Śravaṇā* or *Altair*, and the moon at the mean rate takes exactly 18 days 8 hrs. and 24 min. or 18 days nearly to pass from *Acyon* to *Altair*. This also confirms the statement made above that on the eve of the first day of the battle, the moon was near to the star group *Kṛttikā* or *Acyon*, and that she was about 13 days old.

On the 10th day of the battle at sunset, Bhīṣma the first general of the Kaurava armies fell on his 'bed of arrows', became incapacitated for further participating in the fight and expired after 58 days, as soon as it was observed that the sun had turned north. Yudhiṣṭhira came to the battlefield to see Bhīṣma expire and to perform the last rites. The passage from the *Mahābhārata* runs thus :—

(vii) 'Yudhiṣṭhira, having lived at Hastināpura for fifty nights (after the battle was over), remembered that the day of expiration of the chief of the Kauravas (Bhīṣma)

¹ चरदृषोत्तमगात्रसमद्युतिः स्मरशरासनपूषसमप्रभः ।

नववधूस्मितचाकसमोदरः प्रविष्टतः कुसुदाकरबाध्वः ॥ ४८ ॥

Drona, Ch. 185, 48.

² *Āitareya Brāhmaṇa*, XXXII, 17; also *Gopātha Brāhmaṇa*, VI, 10.

³ चत्वारिंशदहान्यद्य द्वे च मे निःसृतस्य वै ।

पुष्येण संप्रयानोऽस्मि श्रवणे पुनरागतः ॥

Saṅgita, Ch. 34, 6.

had come. He went out of Hastināpura with a party of priests, after having seen that the sun had stopped from the southerly course, and that the northerly course had begun.’¹

It is clear from the above passage that at the time of the Pāṇḍavas there were special observers of the equinoxes and the solstices. As regards the equinoxes, they probably took that day as the equinoctial day on which the sun either rose or set exactly at the east or west point. As to the solstices, they probably took that day for the solstice which was the middle day of the entire period during which the sun seemed to remain stationary at the rising or setting points on the horizon at the extreme north or the extreme south.² The *Mahābhārata* does not state how these phenomena were observed or determined. Anyhow Yudhiṣṭhira observed that the sun had turned north before he started out from his capital to see Bhīṣma on his ‘bed of arrows’ about to expire. When he met Bhīṣma at Kurukṣetra, he (Bhīṣma) thus spoke to him :—

(viii) ‘It is a piece of good luck, O. Yudhiṣṭhira, the son of Kuntī, that you have come with your ministers. The thousand rayed glorious Sun has certainly turned back. Here lying on my bed of pointed arrows, I have passed 58 nights : this time has been to me as endless as a hundred years. O. Yudhiṣṭhira, the lunar month of Māgha is now fully on and its three-fourths are over. This half month ought to be bright.’³

¹ जषित्वा शर्व्वरौः त्रीमान् पञ्चाशन्नगरोत्तमे ।

समयं कौरवाग्रस्य मस्मार पुरुषर्षभः ।

स निर्यथौ गजपुरादुद्यज्जकेः परिवारितः ।

दृष्ट्वा निवृत्तमादित्यं प्रवृत्तं चोत्तरायणम् ॥

Anuśāsana, or Bk. XIII, Ch. 167, 5-6 : This passage shows that almost the whole of the *Sānti* and *Anuśāsana parvas* were later additions to the present *Mahābhārata*.

² For finding the middle day of the year or the *Viṣuvan*, which in one sort of calendar of the age of the Brāhmaṇas, was the day of the summer solstice, the sun was observed to remain stationary at the rising point for 21 days and the middle day or the eleventh day was considered to be the true middle day of the year or the day of the summer solstice. *Āitareya Brāhmaṇa*, XVIII, 18, quoted by S. B. Dikṣita in his *भारतीय ज्योतिःशास्त्र*, 2nd edition, page 47.

³ दिष्ट्वा प्राप्तोऽसि कौन्तेय सद्दामात्यो युधिष्ठिर ।

परिवृत्तोऽहि भगवान् सदृशं शुद्धिवाकरः ॥

अष्टपञ्चाशत् रात्र्यः शयानस्याद्य मे गताः ।

श्रेष्ठा निशिताग्रेषु यथा वर्षशतं तथा ॥

माघोऽयं समनुप्राप्तो मासः सौम्यो युधिष्ठिर ।

त्रिभागशेषः पक्षोऽयं शुक्लो भवितुमर्हति ॥

Anuśāsana or Bk. XIII, Ch. 167, 26-28.

Here the last sentence was a pious wish not materialized.¹ The lunar months here used are undoubtedly from the light half of the month for reasons set forth below :—

(A) Time from the new moon at the star			
<i>Antares</i> to the moon's reaching the			
<i>Kṛttikās</i>	..	..	13 days.
Bhīṣma's generalship	..	..	10 ..
Bhīṣma on death-bed	..	..	58 ..
TOTAL			81 days.
(B) Again from the new moon at <i>Antares</i> or			
the beginning of the synodic month			
of Agraḥāyana till its end			
	..	..	29·5 days.
The synodic month of Pauṣa	..	..	29·5 ..
Three-fourths of the month of Māgha	..	..	22·0 ..
TOTAL			81 days.

Hence these two reckonings are corroborative of each other. If, on the other hand, we assume that the lunar months counted here were taken as commencing from the dark half of the month and ending with the light half, the synodic month of Agraḥāyana would be half over with the new moon at *Antares*. From that time till $\frac{3}{4}$ ths of Māgha were over, we get only :—

(C) Half of Agraḥāyana	..	..	14·75 days.
The month of Pauṣa	..	..	29·5 ..
Three-fourths of Māgha	..	..	22·0 ..
TOTAL			66·25 days.

The number of days here counted falls short of the 68 days, viz., Bhīṣma's generalship of 10 days + Bhīṣma on death-bed of 58 days. This third reckoning thus is not consistent with the *Mahābhārata* references quoted already and does not tally with the accounts (A) and (B) shown above. It is thus evident

¹ The original word in place of *śukla* was perhaps *kṣma* and a subsequent redactor changed the word to *śukla*, to bring out the approved time for the death of Bhīṣma. Nilakanṭha, the commentator of the *Mahābhārata* quotes a verse from the *Bhārata Sāvitrī*, which also says that 'Bhīṣma was killed by Arjuna on the 8th day of the dark half of the month of Māgha': see Bhīṣma Parva, Ch. 17, Stanza 2. In an edition of the *Bhārata Sāvitrī* to which I had access at the Imperial Library, Calcutta, the verse runs as 'Bhīṣma was killed in the month of Agraḥāyana on the 8th day of the dark half'. This of course refers to the day on which Bhīṣma fell on his 'bed of arrows'; 58 days after that—i.e. exactly one day less than full two synodic months becomes the 7th day of dark half of Māgha. Hence also Bhīṣma expired in the dark half of Māgha and not in the light half.

that the present-day lunar months which end with the full moon and a half month earlier than the astronomical lunar months ending with the new moon are not used in these references. It is clear that Bhīṣma expired on the 8th day of the dark half and not of the light half of the astronomical synodic month of Māgha.

DAY OF BHĪṢMA'S DEATH AND THE EKĀṢṬAKĀ.

As has been shown the day of Bhīṣma's death was an *Ekāṣṭakā* day, but it could not be the true *Ekāṣṭakā* day of the *Taittirīya Saṁhitā* and of the *Tāndya Brāhmaṇa*, which does not happen every year.¹ The true *Ekāṣṭakā* was that day at the last quarter of the month of Māgha, at which the moon was very near to the star *Antares* or *Jyesthā*.² as it is defined in the *Āpastamba Gṛhya Sūtra*, VIII, 21, 10. Such an *Ekāṣṭakā* can only fall in the year in which the full moon of the lunar month of Māgha happens very near to the star *Maghā*. In our own times, for example, such an event took place on :—

the 3rd March in 1929 A.D.,

the 28th February in 1932 A.D.,

the 26th February in 1935 A.D.

And of these dates the two underlined were the true *Ekāṣṭakā* days. The *Ekāṣṭakās* of the intervening years were not the true ones. In the days of the *Taittirīya Saṁhitā*, the true *Ekāṣṭakā* day was the day of the winter solstice. Bhīṣma's death fell on an ordinary *Ekāṣṭakā* day.

It might be argued that by making Bhīṣma to lie on his death-bed for 58 days, a subsequent interpolator wanted to push up the year of the Bhārata battle to an age of hoary antiquity, I do not consider that possible. Firstly the traditions for the day on which the sun turned north or south are many as found in Vedic literature :

- (i) The full moon at the Pūrva Phalguni or the new moon of Māgha,³ for which the date is about 3100 B.C.
- (ii) The *Ekāṣṭakā* day of the *Taittirīya Saṁhitā*, the date for which the date is about 2991 B.C.
- (iii) The full moon at *Maghā* or *Regulus* for which the mean date is about 2350 B.C. as we shall see later on.

¹ Quoted by B. G. Tilak in his *Orion*, pages 44-45.

² Also quoted by B. G. Tilak in his *Orion*, page 48 footnote.

³ *Kausītaki Brāhmaṇa*, V, i; Do., XIX, 3; *Satapatha Brāhmaṇa*, VI, Kānda, Ch. 2, Br. 2, 18.

- (iv) Four days before the full moon at *Maghā*,¹ for which the date is about 2062 B.C.
- (v) Sun at the beginning of the *nakṣatra* *Maghā*,² marking the summer solstice, the date for which is about 1900 B.C., the beginning of the *nakṣatra* *Maghā* being taken at 6° behind the star *Maghā* or *Regulus*, according to the *Pañcasiddhāntikā*, XIV, 36.
- (vi) Sun turning south at the middle of the *nakṣatra* *Aśleṣā*, of the *Jyotiṣavedāṅga* period,³ the date for which was about 1400 B.C.

If the interpolator wanted to push up the date of the Bhārata battle, he might make the day of Bhīṣma's death, the day of the new moon of *Māgha* or the day of the full moon at the Pūrva Phalgunis (δ Leonis), which would have made the year, the same as the beginning of the astronomical *Kali Yuga*.

Secondly it is definitely stated as shown above that the sun's turning north had been observed by Yudhiṣṭhira before he started out from his capital to see Bhīṣma about to expire.

Thirdly our calculation will corroborate that the sun turned north one day before Bhīṣma's death, as observed by Yudhiṣṭhira.

Hence the day of Bhīṣma's death, as stated in his words as having come 58 days after his falling on his 'bed of arrows', cannot be taken as an interpolation by any subsequent astronomer.

SIGNIFICANCE OF THE REFERENCES.

From these references it is possible to determine the date of the Bhārata battle. We shall use TWO METHODS, but both the results will be approximate. In the first method we shall, for the sake of convenience, assume that *the nearness of the moon to the several stars as equivalent to exact equality in celestial longitude of the moon with those stars*. With this meaning of 'nearness' we may derive the following sets of data for finding the year of the Bhārata battle.

Data for the calculation of the Date of the Bhārata battle by the First Method.

(a) There was a new-moon at the star *Antares*, before the battle broke out and the sun turned north in 81 days.

¹ ते चतुरङ्गे पुरस्तात् मास्यै पूर्णमास्यै दीक्षन्ते । तेषामष्टकायां क्रयः सम्यद्युते

Baudhāyana Śrauta Sūtra, 16, 13.

² *Maitrī Upaṇiṣat*, VI.

³ *Yajusa Jyotiṣa*, stanza 7.

(b) On the eve of the first day of the battle, the moon 13 days old was in conjunction with *Kṛttikā* or *Alcyone*, and the sun turned north in $10+58 = 68$ days.

(c) On the 18th day of the battle, moon 31 days old was in conjunction with *Śravaṇā* or *Altair*, and the sun turned north in 50 days.

Calculation of Date by the First Method.

Before we can proceed with our calculation we note down below the mean celestial longitudes of the stars concerned for the year 1931.

Star.		Mean celestial longitude.
<i>Jyēsthā</i> or <i>Antares</i>	.. ..	$248^{\circ} 47' 57''$
<i>Kṛttikā</i> or <i>Alcyone</i>	.. ..	$59^{\circ} 1' 44''$
<i>Śravaṇā</i> or <i>Altair</i>	.. ..	$300^{\circ} 49' 7''$

(A) From the data (a) we assume as stated already, that the sun, the moon and the star *Antares* had the same celestial longitude at that new-moon.

Hence the present (1931) longitude of the

sun at the new-moon at <i>Antares</i>	..	$248^{\circ} 47' 57''$
Sun's motion in 81 days	..	$79^{\circ} 50' 3''$

Hence the mean celestial long. in 1931 of the winter solstice of the year of the Bhārata battle

$$\underline{328^{\circ} 38' 0''} \quad (1)$$

The celestial long. for 1931 of the summer solstice of the year of the battle

$$\underline{148^{\circ} 38' 0''} \quad (2)$$

(B) From data (b), the moon at the assumed conjunction with *Kṛttikā* or *Alcyone* was 13 days old.

Hence the (1931) celestial longitude of the moon at that time was

$$59^{\circ} 1' 44''$$

The moon was 13 days old and the mean synodic month has a length of 29.530588 da.,

∴ the moon was ahead of the sun by

$$\frac{360^{\circ} \times 13}{29.530588} \text{ or } .. 158^{\circ} 28' 41''$$

The sun's present-day (1931) celestial longitude for that time

$$260^{\circ} 33' 3''$$

Sun's motion in 68 days

$$67^{\circ} 1' 17''$$

∴ the present (1931) celestial long. of the winter solstice of the year of the Bhārata battle

$$327^{\circ} 34' 20'' \quad (3)$$

The celestial long. for 1931 of the summer solstice of the year of the battle

$$\underline{147^{\circ} 34' 20''} \quad (4)$$

(C) From data (c) the moon at our assumed conjunction with *Śravaṇā* or *Altair* was 31 days old.

Hence the present (1931) celestial longitude of the moon for that time .. 300° 49' 7"

The moon was ahead of the sun by

$$\frac{360^\circ \times 31}{29.530588} \text{ or } \dots \dots 377^\circ 54' 47''$$

The present (1931) celestial long. of the sun for that time 282° 54' 20"

Sun's motion in 50 days 49° 16' 50"

Hence the 1931 celestial long. of the winter solstice for the year of the Bhārata battle 332° 11' 10" (5)

The present celestial longitude of summer solstice of the year 152° 11' 10" (6)

We thus arrive at three divergent values of the present (1931) celestial longitude of the summer solstice of the year of the Bhārata battle, viz. :

From data (a)	.. ..	148° 38' 0"
" " (b)	.. ..	147° 34' 20"
" " (c)	.. ..	152° 11' 10"
The mean of these values	.. ..	<u>= 149° 27' 50"</u>

Again the 1931 longitude of *Regulus* or *Maghā* = 148° 52' 1"

The 1931 long. of *Kṛttikā* or *Acyone* = 59° 1' 44"

Difference 89° 50' 17"

Thus at that time the summer solstitial colure passed through *Regulus* and the vernal equinox coincided with the ecliptic position of *Kṛttikā* or *Acyone* very nearly. When these were exactly the case, it was an *astronomical event*, but our mean value of the present longitude of the summer solstice of the year of the battle shows that the *earthly event* was some years prior to it.

The mean precession rate from 2350 B.C. to 1931 A.D. = 49".7882 per year and the annual proper motion of *Regulus* = -0".2670 per year. Hence the time of the astronomical event was 2350 B.C. (or more strictly 2349 B.C.). The year of the Bhārata battle from our mean position of the summer solstice calculated above, becomes 2370 B.C. This is our date by the first method. It is an approximate result because : (i) we have used the mean and not the apparent motion of the sun, and

(ii) we have made a very big assumption that the nearness of the moon to the several stars in the evenings to have been exact conjunctions, which perhaps were not the case with all or any of the three stars *Antares*, *Pleiades* and *Altair*. The date arrived at, however, shows the great antiquity of the event and must be correct within a hundred years.

THE SECOND METHOD.

On looking up some of the recent nautical almanacs, we find that a new-moon very nearly at the star *Antares* took place on:—

(1) December 1, 1929, at 4 hrs. 48.4 min. G.M.T. or at 9 hrs. 52.4 min. Kurukṣetra mean time.

The sun's longitude at G.M. midnight or
Kurukṣetra mean time 5 hrs. 4 min.

A.M. was .. .. .	..	248° 19' 10"
The moon's longitude at that time ..	..	246° 4' 24"
The longitude of <i>Antares</i> ..	..	248° 46' nearly.

Hence December 1, 1929, was a new-moon day, conjunction taking place very near to *Antares*. It was the day of the new moon of which the presiding deity was Indra and the beginning of the synodic month of Agrahāyana. Thirteen days later was—

(2) Date, December 14, 1929, at 5-4 P.M. of Kurukṣetra mean time which corresponded with the eve of the first day of the Bhārata battle.

The sun's longitude .. .. .	..	262° 1' 57".2
The moon's longitude .. .. .	..	54° 40' 7".5
Longitude of <i>Kṛttikā</i> or <i>Alcyone</i> ..	..	59° nearly.

The moon came to conjunction with *Kṛttikā* or *Alcyone* in about $8\frac{1}{2}$ hrs. more. In the evening at Kurukṣetra, the moon was about 3° behind the *Kṛttikās* visibly, due to the moon's almost horizontal position at sunset. Eighteen days later was—

(3) Date, January 1, 1930, and at 5-4 P.M. of Kurukṣetra mean time :

The sun's longitude .. .. .	..	280° 22' 2".4
The moon's longitude .. .. .	..	296° 47' 34".8
Longitude of <i>Altair</i> or <i>Śravaṇā</i> ..	..	300° 45' nearly.

The moon came to conjunction with *Altair* in 8 hrs. more. This evening corresponded with the evening on which the Bhārata battle ended. Fifty days later came—

(4) Date, 20th February, 1930, the day corresponding to that of Bhīṣma's expiry. At 5-4 P.M. of Kurukṣetra mean time :—

The sun's longitude	..	..	331° 8' 1".1
The moon's longitude	..	..	242° 40' 54".7

The moon had come to her last quarter at about 1½ hours before. The sun's longitude at 5-4 A.M. Kurukṣetra time of this date was 330° 37' 47".

If by this last basis we calculate the year of the Bhārata battle the time comes out to the 2456 B.C. This method evidently gives a more correct result, the difference is only 86 years. But we cannot be sure that 2456 B.C. was the real year of the Bhārata battle. We have now to examine if there is any tradition which supports either of the dates.

THREE TRADITIONS AS TO THE DATE OF THE BHĀRATA BATTLE.

(1) There are at present known three orthodox traditions as to the date of the Bhārata battle, the first of which is due to Āryabhaṭa I (499 A.D.), who in his *Daśagūṭikā*, 3, says 'Of the present *Kalpa* or *Æon*, six *Manus*, 27 *Mahāyugas* and three quarter *yugas* elapsed before the Thursday of the Bhāratas'.¹ This is a simple statement that the Pāṇḍavas lived at the beginning of the astronomical Kali age or at about 3102 B.C.

(2) The second tradition recorded by Varāhamihira (550 A.D.) is ascribed by him to an earlier astronomer Vṛddha Garga (much earlier than Āryabhaṭa I). Varāha says 'The seven ṛṣis were in the Maghās, when the King Yudhiṣṭhira was reigning over the earth : his era is the era of the Śaka king to which 2526 have been added'.² The first part of this statement has remained a riddle to all researchers up to the present time. The second part gives a most categorical statement that Yudhiṣṭhira became King in -2526 of Śaka era, which was 2449 B.C.

(3) The third tradition is due to an astronomical writer of the *Purāṇas*, who says, 'From the birth of Parikṣit to the accession of Mahāpadma Nanda, the time is one thousand and fifty years'.³

¹ काशमनवीढमनुयुगश्च गतास्ते च मनुयुगश्च ना च ।

कल्पादेर्युगपादा ग च मुबद्विसाच भारतात् पूर्वम् ॥

Daśagūṭikā, 3.

² आसन् मघासु मुनयः शासति पृथ्वीं युधिष्ठिरे नृपतौ ।

षड्विकपञ्चद्वियुतः शककालस्तस्य वाञ्छस ॥

Bṛhatsaṃhitā, XIII, 3

³ यावत् परीक्षितो जन्म यावत् नन्द्यभिषेचनम् ।

एवं वर्षसहस्रं तु ज्ञेयं पञ्चाशद्वत्तरम् ॥

Pargiter's Dynasties of the Kali Age, page 58.

Now taking the accession of Chandragupta to have taken place in 321 B.C. and the rule of the Nandas to have lasted 50 years in all, the birth of Parikṣit according to the statement of this Purāṇic writer becomes about 1421 B.C.

Of these three traditions our finding of the date of the Bhārata battle, whether 2370 B.C. or 2456 B.C. approaches closest to the year -2526 of Śaka era or 2449 B.C. It is therefore necessary to examine the year -2526 of the Śaka era.

*Astronomical Examination of the year -2526 of Śaka
era or 2449 B.C.*

We found before that in 1851 of Śaka era elapsed or 1929 A.D. the various 'conjunctions' of the moon with the sun and the several stars happened in closest coincidence with the *Mahābhārata* references.

From -2526 to 1851 elapsed of the Śaka era, the number of years was 4,377. We shall assume that these were sidereal years.

$$\begin{aligned} \text{Now,} \quad \frac{\text{Sidereal year}}{\text{Sidereal month}} &= \frac{365.25636}{27.32166} \\ &= 13 + \frac{1}{2} + \frac{1}{1} + \frac{1}{2} + \frac{1}{2} + \frac{1}{8} + \frac{1}{12} + \frac{1}{1} + \frac{1}{7} + \frac{1}{9} + \dots \end{aligned}$$

$$\text{The convergents are } 13, \frac{27}{2}, \frac{40}{3}, \frac{107}{8}, \frac{254}{19}, \frac{2139}{160}, \frac{25922}{1939}$$

etc. The last three convergents calculated by us give the luni-solar cycles of 19, 160 and 1,939 years in which the moon's positions with respect to the sun and the stars repeat themselves.

$$\text{Here we have } 4377 = 1939 \times 2 + 160 \times 3 + 19.$$

It is thus concluded that the various conjunctions which happened in 1929 A.D. had repeated themselves also 4,377 years before. In fact we have,

$$\begin{aligned} \text{Sidereal year} \times 4377 &= 1598727.08772 \text{ da.}, \\ \text{Sidereal month} \times 58515 &= 1598727.016821 \text{ da.}, \\ \text{and Synodic month} \times 54138 &= 1598726.973144 \text{ da.} \end{aligned}$$

Thus from a consideration of the mean motions of the sun and the moon it is inferred as a certainty that the various 'conjunctions' of the moon with the sun and the stars recorded in the *Mahābhārata* did actually happen in -2526 of Śaka era. We now proceed to examine the year more closely by a consideration of the apparent positions of the sun, moon and stars, on the days indicated by the *Mahābhārata* references.

The number of days elapsed from January 1, Greenwich mean midday of 1900 A.D. to December 1, Greenwich mean midday of 1929 A.D. = 10926 days. In 4377 sidereal years, the number of mean solar days = 1598727 days as shown above. Hence the number of days between January 1, of 1900 A.D.

Greenwich mean midday to the day of the new-moon at *Antares* in -2526 of Śaka era = 1587801 days.

Now the mean tropical places at 1587801 days before January 1, 1900 A.D., Greenwich mean midday or the Kurukṣetra mean time 5 hrs. 4 min. P.M. were the following for :—

Sun	..	..	..	189° 25' 33".95
Sun's apogee	..	..	..	27° 38' 55"
Moon	..	..	..	192° 8' 37".80
Moon's apogee	..	..	..	8° 37' 16".3
Moon's node	..	..	..	103° 9' 52".65
Eccentricity of the sun's orbit	..	..	..	.018342

We have calculated these mean places and the eccentricity of the sun's orbit according to the astronomical constants as given on pages XII and XVI of the *Connaissance Des Temps* for the year 1931. The authority for the sun's elements is *Ann. del'Obs. de Paris : Mem., t. IV*, while that for the moon's is *Ann. du Bureau des Longitudes, t. VII, Paris, 1911*.

Hence we calculate to a fair degree of approximation that on the date and time stated above, the apparent longitudes of :—

Sun	..	..	..	188° 45' 13",
Moon	..	..	..	192° 43' 46",

while the longitude of *Antares* .. 188° 13' 19" nearly according to our calculation. Hence the new-moon had been already over by about 8 hours, and the sun and the moon were very near to *Antares* at the instant of conjunction.

Thirteen days later or on the eve of the first day of the Bhārata battle, the mean and the apparent longitudes were :—

	Mean.	Apparent.
Sun	.. 202° 14' 22".25	202° 2' 44"
Moon	.. 3° 26' 13"	4° 23' 6", at 5-4 P.M.

of Kurukṣetra mean time and of *Kṛttikā* or *Alcyone* the mean longitude was 358° 25' 9".

Here the conjunction with *Kṛttikā* had happened about 12 hours before. *Alcyone* of the star group *Pleiades* being about 6° behind the moon ; both were visible by the naked eye. The battle began from the next morning, when the age of the moon became 13 days and 20 hrs. nearly, or by the Indian mode the fourteenth *tithi* of the bright half of the month was over, and the moon was near to *Aldebaran* or *Rohiṇi*.

In another 18 days or 31½ days after the new-moon at *Antares*, the longitudes were :—

	Mean.	Apparent.
Sun	.. 219° 58' 52"	220° 26' 0"
Moon	.. 240° 36' 44"	245° 51' 35" at 5-4 P.M., Kurukṣetra mean time.
<i>Altair</i>	.. ....	239° 28' 6"

according to our calculation. The moon's conjunction with *Altair* had happened 12 hours before. Hence the predicted place of the moon by Valadeva on the day of the mace-duel had come true in the morning. The battle which lasted exactly $17\frac{1}{2}$ days, ended on this evening.

In fifty days more or $81\frac{1}{3}$ days after the new-moon at *Antares*, the tropical longitudes were :—

	Mean.	Apparent.
Sun	.. $269^{\circ} 15' 48''$	$271^{\circ} 7' 58''$
Moon	.. $179^{\circ} 25' 55''$	$176^{\circ} 40' 55''$ at 5-4 P.M. of Kurukṣetra mean time.

Thus the sun had turned north about 28 hours before and the moon came to her last quarter in about 9 hours. According to the Indian mode the 8th *tithi* of the dark half of the month had begun 3 hours before. Bhīṣma expired at about the time for which the longitudes have been calculated.

The Actual Dates of the Bhārata Battle.

Now comes the question of finding the actual days of the battle. From 1900 A.D. back to 2449 B.C. we take the mean length of the tropical year at 365.2423323 days. Hence 1587801 days = 4347 years + 93 days. So the year of the Bhārata battle becomes -2448 of the Christian era or 2449 B.C. Hence also—

	New style.	Old style.
(a) <i>The date of the new-moon at Antares was</i> ..	.. 30TH SEPT.	21ST OCT.
(b) <i>The battle began on</i> ..	.. 14TH OCT.	4TH NOV.
(c) <i>The battle ended on</i> ..	.. 31ST OCT.	21ST NOV.
(d) <i>Bhīṣma expired on</i> ..	.. 20TH DEC.	9TH JAN. 2448 B.C.

We have extended the new style to so ancient a time as it helps us more easily to realize the season of the year in which the battle was fought.

It being settled that the Bhārata battle was fought in 2449 B.C. between the two dates found above, the tradition recorded by Varāhamihira becomes alone correct because it is supported by the *Mahābhārata* references. The other two traditions are not trustworthy. Again for an event for which the date is not actually recorded in a reliable historical work, no better evidences of date, than those used here, are possible. We now proceed to set forth other *Mahābhārata* references which corroborate our finding.

OTHER MAHĀBHĀRATA REFERENCES.

In 2449 B.C. or the year of the Bhārata battle the mean longitude of :—

Kṛttikā (*Alcyone*) was = $358^{\circ} 25' 9''$, and
of *Maghā* (*Regulus*) was = $88^{\circ} 38' 21''$.

Hence at this time the vernal equinox was very near to the ecliptic place of *Kṛttikā* and the summer solstitial colure nearly passed through *Maghā*. The full moon at the *Kṛttikās* (the harvest moon of that time) was the time of autumnal equinox and the full moon at the *Maghās* was the time of winter solstice. These times of *Viṣuva* and *Ayana*, as they were called, were regarded as of special merit for the performance of some religious rites in those days. In the *Mahābhārata* we get the following references to these full moons :—

‘The man who goes to Puṣkara specially at the full moon at the *Kṛttikās*, gets the blessed worlds for all times in the house of Brahmā.’¹

‘A man may perform the *Agnihotra* sacrifice for a full hundred years or live for one full moon night at the *Kṛttikās* at Puṣkara : These two are of the same merit.’²

‘A man reaching a holy bathing place at the full moon at the *Kṛttikās* and the *Maghās*, gets the merit of having performed respectively the *Agniṣṭoma* and the *Atirātra* sacrifices.’³

‘At the full moon at the *Kṛttikās*, if a man should go to the bathing place called Urvaśī, and bathe in the Lauhitya (Brahmaputra), according to the *śāstric* rules, with a devoted or prayerful mind, he would get the religious merit of having performed the *Puṇḍarika* sacrifice.’⁴

¹ कार्तिकीं तु विशेषेण योऽभिगच्छति पुष्करम् ।

प्राप्नुयात् स नरो लोकान् ब्रह्मणः सद्नेऽश्नयान् ॥

Book III, Ch. 82, 31-32.

² यस्तु वर्षव्रतं पूर्णमग्निहोत्रमुपासते ।

कार्तिकीं वा वसेदेकां पुष्करे सममेव तत् ॥

Book III, Ch. 82, 36-37.

³ कृत्तिकामघयोश्चैव तीर्थमासाद्य भारत ।

अग्निहोमतिरात्राभ्यां फलमाप्नोति मानवः ॥

Book III, Ch. 84, 51-52.

⁴ उर्वशीं कृत्तिकायोमे मत्वा चैव समाहितः ।

होचित्ये विधिवत् काला पुष्करौकफलं लभेत् ॥

Anuśāsana or Bk. XIII, Ch. 25, 46.

‘At Prayāga (the confluence of the Ganges and the Jamuna) at the full moon at the *Maghās*, three crores and ten thousand holy waters meet.’¹

All these references first corroborate the result obtained as to the date of the Bhārata battle, secondly to the fact that in the ancient history of Hindu India, there was undeniably a time when the vernal equinoctial point passed through the ecliptic position of *Kṛttikā* or *Alcyone* and the summer solstice passed through the star *Maghā* or *Regulus*, the mean date for which we have found already, was 2350 B.C.

THE DATE OF THE BHĀRATA BATTLE AND THE ANTIQUITY OF VEDIC LITERATURE.

The date of the Bhārata battle or the time of the Pāṇḍavas is very important, because Janamejaya Pāriksita is mentioned in both the *Aitareya* and the *Śatapatha Brāhmaṇas*, as to have performed the *Aśvamedha* sacrifice with the help of his priest Tura Kāvaseya.² Now this Janamejaya Pāriksita was undoubtedly the great-grandson of Arjuna, the third Pāṇḍava. Arjuna is mentioned in the *Śatapatha Brāhmaṇa*,³ so also is mentioned Bharata, the son of Duṣmanta who was an ancestor of the Kauravas and the Pāṇḍavas. The name Dhṛtarāṣṭra Vaicitra-vīrya is also found in Vedic literature.⁴ Again Kṛṣṇa, the son of Devakī, is mentioned in the *Chāndogya Upaniṣat*.⁵ Again Tura Kāvaseya, the priest of Janamejaya, was in one line the first teacher of the *Upaniṣads*.⁶ Weber has said that the Mahābhārata sāga (not the epic) in its fundamental parts extends to the *Brāhmaṇa* period.⁷ Now that we have established that the Bhārata battle was fought in 2449 B.C. we can form an idea of the beginning and the end of the period in which the Vedic literature was developed. In a paper named ‘Age of the *Brāhmaṇas*’, published in the Indian Historical Quarterly, Calcutta, September, 1934, I have, I trust, successfully established that the superior limit to the *Brāhmaṇa* period of ancient Indian History was 3100 B.C., while the lower limit was something like

1 दशतौर्धसहस्राणि तिस्रः कोट्यस्तथापरा ।

समागच्छन्ति माथां तु प्रयागे भरतर्षभ ॥

Anuśāsana or Bk. XIII, Ch. 25, 37.

² *Aitareya Brāhmaṇa*, IV, K. VIII, 21; also *Śatapatha Brāhmaṇa*, XIII, Kāṇḍa V, 4, 2.

³ *Śatapatha Brāhmaṇa*, II, K. I, 2, 11.

⁴ *Kāthaka Samhitā*, X, 6.

⁵ *Chāndogya Upaniṣat*, III, Kāṇḍa 17.

⁶ *Śatapatha Brāhmaṇa*, X, concluding lines, and *Bṛhadāranyaka Upaniṣat*, Ch. 6. It may be doubted from this if the *Gītā* of 18 chapters was an integral part of the original *Mahābhārata* and the *Bhārata*.

⁷ Hopkin's Great Epic of India, page 386.

2000 B.C. Our date of the Bhārata battle shows that the Brāhmaṇas were begun before the time of the Pāṇḍavas and completed after their time. The advanced *Upaniṣads* very probably belong to the post-Pārikṣita period, but the lower limit to the time of development of this type of literature was nearly the same as that of the *Brāhmaṇas*.¹

CONCLUSION.

We have thus come to the most definite conclusion that the Bhārata battle did actually take place in —2526 of Śaka era or 2449 B.C. For one single event only one date is possible. I trust, the problem of finding this date from the Mahābhārata data, has been solved in this paper for the first time. The date arrived at makes the event as contemporary with the Indus valley civilization. In the *Mahābhārata* we get many references to show that *Rākṣasas*, the *Asuras* and the Aryan Hindus had their kingdoms side by side. In *Vana-parva* or Book III, Chapters 13–22 give us a description of the destruction of Saubha Puri by Kṛṣṇa. This may mean the destruction of a city like Mahenjo Dāro. The Bhārata battle was a pre-historic event and the Purāṇic dynastic lists relating to this period cannot be taken as correct. They are mere conjectures and can be accepted only when they can be verified from other more reliable sources. There are undoubtedly several gaps in these lists which have yet to be accounted for. In many cases wrong traditions may be found repeated in many books; they all may be echoes of one statement and are not acceptable. Not such are the *Mahābhārata* references which we have collected from the *Udyoga* to the *Anuśāsana-parva*. I trust my thesis stands on solid astronomical basis selected with the greatest care and discrimination. The misinterpretations of the commentator have been, on some occasions, confounding for a time.

The historical methods are often liable to very serious errors by wrong identification of persons from a similarity of names. The astronomer Parāśara, probably a man of the first and second centuries, was wrongly identified with Parāśara, the father of Vyāsa the common ancestor of the Kauravas and the Pāṇḍavas by the earliest researchers, Sir Wm. Jones, Wilford and Davis.² They based their calculation on the statement of this Parāśara,

¹ A *Bhāgavata Upaniṣat*, viz., the *Maitrī Upaniṣat*, states the position of the summer solstice at the beginning of the nakṣatra *Maghā*, for which the time is about 1900 B.C., vide the *Maitrī Upaniṣat*, VI, which is given from an earlier work. It has not been possible to find out that earlier work.

² *Asiatic Researches*, Vol. II, etc., cf. also Brenand's *Hindu astronomy*, Ch. IX, pp. 112–125.

the astronomer, as to the position of the solstices ; their calculation has but given an approximate date of an astronomical event but neither the time of the Pāṇḍavas nor of the astronomer Parāśara. Such mistakes have been made by many subsequent researchers, who have used the sameness or similarity of names as a basis for a historical conclusion. Not such are the astronomical references used in this paper. They are all definite in meaning and, as I have said already, for an event of which the date is not recorded in a reliable historical work, no better evidence of date is possible. Our examination in the light of these references fully corroborates the date recorded by Varāhamihira whose statement must now be regarded as more reliable than those of the host of the writers of the Purāṇas of unknown name and time.

I have great pleasure in acknowledging that Mr. Nirmal Chandra Lahiri, M.A., has helped me in revising some of the astronomical calculations of this paper. I shall be very grateful indeed to any reader for any corrections and suggestions.



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Articles 341-350

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FOREWORD.

It is a happy event in the history of the Numismatic Society to be able to record its Silver Jubilee. The idea of celebrating this with a special Supplement was widely approved and the response to the appeal was quite good. Unforeseen events have, however, delayed the appearance of this volume, and the President craves the indulgence of the members, who have been waiting for its appearance for over two years. Our thanks are due to the authors of the papers as well as to the two numismatists who have presented a resumé of the work done by the Society during the last 25 years.

K. N. DIKSHIT,
*President, Numismatic Society
of India.*

SIMLA,
30th April, 1938.

NUMISMATIC SUPPLEMENT No. XLVII

Silver Jubilee Number

ARTICLES 341-350

Continued from 'Journal Royal Asiatic Society of Bengal, Letters,' Vol. II, 1936, No. 3.

341. A RESUMÉ OF NUMISMATIC RESEARCH IN INDIA.

With the close of the year 1935 the Numismatic Society of India completed 25 years of its existence. At its meeting held at Mysore that year it was decided that the next supplement be issued as the Jubilee number of the Society wherein it was proposed to publish the articles specially received for the occasion along with a short review of the work done by the Society during the last twenty-five years. A detailed bibliography of the original work done by different Numismatists has been published in Numismatic Supplements Nos. 41 and 43. It is, therefore, proposed to give a general resumé of the work done in India hitherto, regarding the old coinage of the country.

The history of Numismatic studies in India goes back to the year 1824 when, in the transactions of Royal Asiatic Society, Col. Todd published a Memoir on Greek, Parthian and Indian medals, wherein for the first time, he noticed the coins of Apollodotus and Menander. A find of coins of the sultans of Bengal in 1841 brought the issues of the Islamic rulers of India to the notice of scholars.

In the latter half of the 19th century, Cunningham, Theobald and Bhagwanlal Indraji were the giants of the Numismatic world. Hoard after hoard of ancient, mediæval and Muhammadan coins surrendered its secrets to these veterans, whose publications display them to the best advantage of contemporary and later scholars. They were succeeded by Vincent Smith, Lane Poole, Edward Thomas, E. J. Rapson, C. J. Rodgers, Elliot, Hoernle, Thurston and others who, through their own collections or publications advanced this study to a considerable extent and created a keen interest for coin collecting and Numismatic research. The *Catalogues of Coins* in the British Museum (London), Indian Museum (Calcutta), the Central Museum (Lahore) and the Government Museum at Madras along with a series of learned articles and notices of coins and coin types in the pages of the *Proceedings* and *Journals* of the Asiatic

Society of Bengal and other scientific Journals shed a flood of light on the different classes of Indian coins. This formed a very strong foundation for the structure of further Numismatic research. In the beginning of the present century, there sprung up a class of Numismatists who were not only very keen collectors of coins and ardent students of Numismatics, but were also keen on the co-ordination of the results of these researches and on systematizing the studies by affording a common platform for bringing together collectors and students of Indian Numismatics.

With this end in view the six founders of this Society, viz. Hon. Mr. (Now Sir) Richard Burn, I.C.S., H. R. Nevill, Esqr., I.C.S., R. B. Whitehead, Esqr., I.C.S., the Hon. Mr. H. N. Wright, I.C.S., Mr. Framji Thanawala, and Rev. Dr. Geo. P. Taylor, D.D. met together for the first time at Allahabad on the 28th of December 1910 and brought into being a Society called 'The Numismatic Society of India' and invited Sir John Stanley, the Chief Justice of Allahabad to be the first President of the Society. The annual fee for membership was fixed at Rs. 5. Early in 1911 an appeal was issued by Whitehead as the Honorary Secretary, wherein he stated 'Coin collecting in India up to the present has proceeded in a haphazard manner. A great deal has been done and is being done by Government and private collectors, but all has been independent of each other and there has been no means of co-ordinating the results which has undoubtedly been attended with wasted efforts and loss.' With these opening words he sent round a prospectus informing all concerned with the collection and study of coins, about the constitution of the Society intended not only for the encouragement and advancement of studies in Indian Numismatics, but also for the co-ordination and promotion of researches in that direction with a view to regulate the studies and achieve a systematized promotion of the knowledge. Indian coin collectors were invited to join the Society with a view to obtain references to books for reading of the coins they may have picked up and to have a general information on the subject. It was also suggested that Numismatists abroad may do well to keep in touch with modern developments in Indian Numismatics by joining the Society. This resulted in the rallying of as many as 46 members round the standard of the Society in the very first year of its inception. Its popularity increased and its membership grew steadily in the succeeding years. By the end of the first five years the Society had on its roll some 150 members including some in England, America, Russia, Austria, Holland, Singapur and Ceylon.

In the earlier years the Society seems to have taken a very keen interest in the preparation of the lists or catalogues of collections lying in various museums and with the private collectors. The original members took upon themselves to

prepare the catalogues in their own provinces and constantly pressed on the provincial Governments in other parts of India to have this work done at an early date. They even undertook to train candidates for the purpose. With their influence and competence they succeeded in obtaining a good response and encouragement in this direction. In 1912, for instance, Whitehead was relieved of some of his official duties by the Punjab Government with a view to allow him leisure enough for the preparation of the catalogue of coins in the Central Museum, Lahore, and was further permitted to proceed on furlough to England to see the catalogue through the press. This resulted in the publication of two valuable volumes of the catalogue of coins in the Lahore Museum in 1914 which remain the standard publications in the branches of Indian numismatics to which they relate. In the same year the catalogue of Gupta coins in the British Museum was published by one of our members, J. Allan, whereby our knowledge of these coins was materially advanced, particularly regarding the metrical character of the legends. Then the issue of the catalogue of Mughal coins in the Lucknow Museum by C. J. Brown and that of the Sultans of Delhi by Prayag Dayal in the year 1920 and 1925, respectively, brought many new coins to light. Bleazby like his earlier lists of coins in the Museums at Srinagar (Kashmir) and Rangoon, undertook to prepare a catalogue of coins in the Nagpur Museum and issued it in the year 1922. A catalogue of coins of Indian States compiled by Henderson, C. J. Brown and Valentine was edited by J. Allan and issued in 1928. The catalogue of Durrani coins in the Lahore Museum by Whitehead, issued in 1933, proved the necessity and advantage of dynastic catalogues of coins in a comprehensive style. The authorities of the Prince of Wales Museum, Bombay, also followed suit and have, towards the end of the period under review, issued the Catalogue of Coins of the Gujarat Sultans compiled and edited by C. R. Singhal and G. V. Acharya, respectively. This and the catalogue of the coins and metrology of the Sultans of Delhi in the Museum of Archæology at Delhi by H. N. Wright include even the coins that are in other cabinets and as such can be termed as corporuses on the respective subjects. *This welcome phase of cataloguing facilitates study to a very great extent and the students are spared the trouble of turning over the pages of various publications for a single subject.* Thus almost all the important museums in India have through their various experts contributed their own quota by issuing the catalogues of their treasures for the use and reference of scholars working in different branches of Numismatics.

Memoirs.—Besides being instrumental in the production of catalogues of different Museums and collections, the Society itself has hitherto issued two occasional Memoirs, viz. 'The Coins of the Tipu Sultan' prepared by G. P. Taylor and 'A

study of Mughal Numismatics' by S. H. Hodivala. They were published in the years 1914 and 1923 respectively. These scholarly treatises gave a good deal of ready made material and a great impetus to the study of the coinage of the Sultans of Mysore and the Mughal Emperors of Delhi, respectively. A third Memoir on mint towns of the Sultans of Delhi and the Mughals, by R. B. Whitehead is under preparation. The issue of this monograph will, it is hoped, give us authoritative information about the definite location, importance and activity of mint towns under these rulers whence the tiny record of history were issued in various metals from time to time.

The Society has instituted the award of two medals every year for the promotion and encouragement of Indian Numismatics. They are (1) Nelson Wright Medal, (2) Prize Medal of the Numismatic Society of India.

(1) *H. N. Wright Medal*.—At the annual meeting held at Ahmadabad in February 1917, it was announced that Mr. H. Nelson Wright, I.C.S., has presented a medal to the Society. The design for the dies of this medal is taken from a superb muhr issued by the Emperor Jahangir in the first year of his reign with the portrait of his father Akbar. Two replicas, one in bronze and the other in silver were presented by the donor himself. Thereafter the Society spends for the replicas whenever required. A bronze medal is awarded annually for the work done during the year by a member of the Society on Indian Numismatics, which is published in the Numismatic Supplement or elsewhere if such work is found to deserve the distinction. The Silver medal is kept for presentation to any specially meritorious member of the Society in recognition of exceptional services to Indian Numismatics and is very sparingly given. G. P. Taylor had the privilege of receiving the first special Silver medal in 1916. Prof. Hodivala's researches brought for him three medals, one of them being a special Silver medal awarded in the year 1926. C. J. Brown and R. B. Whitehead won two each, of which one awarded in the year 1923 to both was a Special Silver one. In the succeeding year H. N. Wright himself was the recipient of a special Silver medal. The sixth and the last during the period under review was awarded to K. P. Jayaswal. Names of other scholars whose Numismatic researches were considered worthy of the award of bronze medals are E. H. C. Walsh, H. R. Nevill, W. H. Valentine, F. D. J. Paruck, R. B. Prayag Dayal, J. Allan, S. K. Chakrabortty and C. R. Singhal, who must thus be considered amongst the foremost Numismatists of India.

No work of sufficient merit was published in the years 1918, 1927, 1929, 1930, 1932, 1933 and 1936 and hence no medal was awarded in those years.

(2) *The Prize Medal*.—The Society instituted a Prize Medal in the year 1927 which is awarded to the writer of the best

essay on a subject prescribed by the Society every year. No medal is, however, awarded if no essay out of those submitted in a particular year comes up to the required standard.

The first of these Silver Medals was awarded to Pareshnath Bhattacharya in 1927. After a lapse of four years Surendra Kishore Chakraborty got another in 1932. In the succeeding year Durga Prasad's essay merited the award of a gold Medal. In the year 1935 Capt. M. F. C. Martin was awarded another gold medal.

The Society has thus tried to encourage research in Indian Numismatics.

Annual Meetings and Report.—The members of the Society are invited to meet once a year generally towards the end of December when the Committee of Management and office bearers for the ensuing year are elected and deliberations regarding the advancement of Numismatic knowledge are carried on. Besides reviewing the Numismatic research done during the year, members have the opportunity of discussing problems of interest and help one another in the examination and assignment of difficult or unidentified coins. Here they also have an opportunity of seeing and exhibiting unique and rare coins and listening to the illuminating Presidential addresses and papers incorporating the researches of individual scholars. All these transactions as well as other useful information including the names of the members with the subjects in which they have specialized are published in the annual proceedings, to facilitate mutual correspondence by members regarding the examination, assignment, purchase and sale of coins.

We may now turn to the researches in the different periods and branches of Indian numismatics during this period. In the beginning we may refer to the Carmichael lectures on numismatics of Professor D. R. Bhandarkar, which throw considerable light on the origin of coins and metrology in Ancient India. The excavations at Mohenjo Daro and Harappa have brought to light several round and rectangular pieces of silver and inscribed pieces of copper conforming to a definite system of weights, which must thus be considered as the earliest attempt at currency in India. The definite beginnings of Numismatics in India, however, starts with the Karshapanas and punch-marked coins, which have happily received a great deal of attention of late.

Punch-marked coins.—In the last century Sir A. Cunningham was the first to establish their remote antiquity and to remove the wrong notion that India borrowed the art of coinage from the Greeks after Alexander's invasion. Theobald paid a special attention to the symbols found on these coins and tried to interpret and describe them. Spooner in his description of these coins found from the vicinity of Taxila noticed for the first time the grouping arrangement of the various symbols

on them, though of course his theory of their Buddhist character could not stand the test. R. D. Banerji in his learned description of these coins presented to the Asiatic Society of Bengal by the Amir of Kabul proved that the punch-marked coins were not only the earliest coins of India but were also current at the same time in Afghanistan (*vide* Num. Supplement No. XIII). He further noticed some new symbols and a few Brahmi and Kharoshthi letters of the Maurya and Kushan periods. V. Smith in Vol. I of the Catalogue of Coins in the Indian Museum, Calcutta, tried to assign different eras to these coins. This was followed by Walsh in 1919 who elaborately described the hoards of this class of coins from Patna and Bhagalpur in the Journal of Behar and Orissa Research Society and contributed substantially to the knowledge of the different types. In recent years Jayaswal made very commendable efforts to identify some of the symbols on these coins with the Royal symbols of the rulers of the Maurya and Sunga period. Last of all mention must be made of a very systematic and thorough study of the symbols on the silver punch-marked coins with reference to various hoards found in the different provinces of India made by Durga Prasad of Benares, for which the Society has awarded him a gold medal. His further researches in this branch are also being published. The merit of his studies lies in the accurate drawings of these symbols illustrated in the numerous plates personally prepared by him. (See N.S. XLV.) He has also pointed out that some of the symbols on these coins are either identical with or bear a close resemblance to the figures and pictographs found on the Mohenjo Daro seals, whereby he has tried to establish a connecting link between the period of the issue of these coins with that of the Indus Valley Civilization.

Indo-Greek.—As in other branches, Sir A. Cunningham, James Prinsep, and J. Burgess have contributed a lot towards the study of these coins in the last century. Edward Thomas discussed the Hindu legends on them. During our own times Sir Aurel Stein noticed and described various deities on them for the first time. Our Parsi Numismatists F. J. Thanawala and F. D. J. Paruck gave some information about the Zoroastrian deity Avooshr or Avoorshr on the Indo Scythian coins. R. B. Whitehead has brought many rare varieties of the Indo-Greeks to the notice of the Numismatists. The excavations at Taxila conducted by Sir John Marshall brought to light a very large number of coins of this Indo-Greek and later rulers of North West India, including the issues of several previously unknown rulers. Two noteworthy finds of these coins at Parehwar near Amarkot and Bajapur in the N.W.F. respectively brought some new types of the coins of Philopator and Soter Megas to light. In another hoard of 970 coins a new type of Didrachmes of

Menander was notable and a Hemidrachme of Zoilos with standing Herakles was quite a new variety. This necessitated the revision of our information regarding the period of this king. M. F. C. Martin's contribution to this branch of studies in this Journal incorporating the description of the coins exhibited by him at Benares in 1929 is worth studying. Students of these coins are referred to articles Nos. 82, 173, 149, 274 and 296 of the Numismatic Supplements.

Kshatrapa.—The most important contribution to this branch of numismatics is the Sarvania hoard of coins which gave several new dates to previously known Kshatrapa kings and at least one new sovereign. Rapson's successful attempt to assign an interesting copper coin to a Kshaharata prince Bhumaka who preceded Nahapana and his comparison with the bow and arrow type of Spalirises with Azes makes a definite advance.

One hoard of 330 silver coins from Central Provinces and two hoards of about 500 coins each were recently examined by Acharya and his description bringing out some novel features and dates appears elsewhere in this Supplement.

Kushans.—Of the Kushan coins also, though no new hoard is recorded, several new types and rarities, especially of Huvishka and Vasudeva have received due attention from scholars interested. Whitehead has noticed a new type of gold double stater of Kadphises II with Siva leaning on the bull behind him and copper of Huvishka with king seated cross-legged and wind god OADO. Tarapore has described a coin of Vasudeva with the degraded greek legend (PA) onano on left margin on the obverse. A new gold coin of Vima Kadphises with king on elephant and complete legend in Greek on the obverse and Siva and bull and Kharoshthi legend on the reverse; another of Huvishka with king on elephant and standing figure of a goddess and the third of Kanishka with the king at altar and the goddess on a lion were described by Martin. The fabric of the last two, however, as seen in the plates makes us rather apprehensive about their genuineness. A. Ghose, a keen collector of the Kushans and the Guptas has mentioned some new varieties of Huvishka and Vasudeva. On the specimen of Huvishka with half length figure of King and Sun god he has the letters Miipo. On a coin of Vasudeva he has a trident in the right hand of the king at altar. Similarly on a coin of Huvishka with Skanda and Visakha on the reverse he shows that the legend is broken in parts.

Gupta.—Coins of the Gupta sovereigns were current for a long period over the vast Gupta Empire and its borders and that account for a large number of their coins being available in the U.P. and Bengal. Nelson Wright has described a new variety of battle axe type of Samudragupta and W. E. M. Campbell has noticed a find of about 20 gold coins of Samudragupta found

in village Kasarwa, Ballia district of U.P. Attempts were made by Allan and Hiranand Sastri at deciphering the legend on Asvamedha coins with the help of two varieties known so far but the last word has yet to be said from some more specimens that may be obtained in future. One of couch type, the other of Archer type with Laxmi seated on lotus and the third of copper Archer type of Chandragupta II, have been published. One peacock type with the legend Mahendrakumarah and two new varieties of lion slayer type of Kumaragupta have been brought to light by Hiranand Sastri and Pannalal. The latter scholar has also proved that the goddess seated on the lion is Parvati and not Laxmi. N. K. Bhattasali has assigned two uncertain coins in the Cabinet of Indian Museum to the ruler Samāchāra and O. C. Ganguli has shown that Vainyagupta was the name of the ruler who issued the coins under the appellation of *Dvādaśāditya*. R. B. Prayag Dayal has described among other coins of Kumaragupta, one thin gold token resembling the copper coin of Kumaragupta with Garuḍa in the upper half and the name of the king Śrī Mahendrāditya in the lower half.

Tribal Coins.—A big hoard of coins of the Audumbaras one of the north-western tribes, found in the Kangra district of the Punjab, was examined and described by R. D. Banerji. The coins had legends in Kharoshthi and Brahmi script, the latter of the first century B.C. type. Banerji discovered two new names on the coins Sivadasa and Rudradasa over and above Dhara-ghosa which was known to Sir Cunningham.

Indo-Sasanian.—Taylor has published an exhaustive article on Successive degradations of Indo-Sasanian coins right up to the thick and dumpy pieces popularly known as Gadheya coins which were current in Gujarat and Malva for a considerable period. Whitehead has described a hoard of White Hun coins found in Kanishka's chaitya at Shahji-ki-dheri, near Peshawar and supplemented the same by describing few coins of Kidara and Mihiragula type from his own collection.

Mediæval dynasties of Central India.—Nelson Wright has noticed eight coins of Gangayadeva found at Isurpur in Saugor District which unlike the thin and broad coins known so far were thick and only $\frac{1}{2}$ inch in diameter. Burn suggested that the coins may be a posthumous issue by Gangayadeva's son, Karaṇa, who was a great conqueror. Rapson has brought to our notice a big hoard of Bull and Horseman type coins found at Lansdowne in the Garhwal district of U.P. Except for a few coins of Sallakshanapala and Anangpāla of the Tomara dynasty the major portion of the hoard refers to Chahadadeva of Narwar. Two types of coins of this ruler are known and this find is not of the usual Narwar type which bear dates from 1233 to 1254. These coins represent Chahadadeva as an independent sovereign. The question has been further discussed with the help of contem-

porary inscriptions by R. D. Banerji when he described a big hoard of about eight hundred coins from Gwalior State. That find has the rude figure of Chauhan horseman on one side and the three lined inscription bearing the names of the ruler on the other side. Coins of Chahadadeva Asalladeva and Gopaladeva are almost equal in number while two hundred and fifty were useless being worn out. A find of 48 silver coins from Panwar in the Rawal State has been assigned by Banerji to Madanvarman of the Chandella dynasty. Though gold coins of both the larger and smaller varieties are known to exist in several Museums, silver issues of this dynasty are very rare, only one coin having been described by Sir A. Cunningham. In that find there were 8 of the larger type and 40 of the smaller variety. The legend is exactly the same as on gold ones.

Banerji corrected the assignment of the gold coins of Mehipala which were previously assigned to Mahipala of the Tomar dynasty of Delhi. The coins of this dynasty are of the Bull and Horseman type, while these gold coins which follow the arrangement of coinage of the Chedi King Gangeyadeva must be assigned to Mahipala I of the Gurjara Pratihara dynasty of Mahodaya. Similarly a find of gold coins from C.P. reported to be of Gangeyadeva were attributed by him to the Parmara chief Udayaditya.

Coins of the Gujarat Chalukyas popularly known as Solankis were noticed for the first time by Burn, who assigned two gold coins found at Pandwaha in Jhansi District of U.P. to Siddharaja, Jayasingh of Anhilwada in Gujarat. Dikshit assigns two coins found by him at the Paharpur excavations to the early Pāla rulers.

Assam and Arakan.—P. R. T. Gurden was the first man to work on these coins and he has described 143 coins found near Garhgaon in the Sibsagar District. These coins are assigned to Siva Singh who ruled from Śaka 1636 to 1666. The name of the Queen Pramatheswari is also there and unlike other coins of the dynasty the inscription is in Persian and not in Devanagari. A. W. B. Botham who has been consistently working on native state coins has closely applied his attention to some of the tough problems of these coins and offered plausible solutions. He has described a collection of the coins of the Kachari kings unearthed in the neighbourhood of Maibong, the old Capital of Kachari kings. These coins resemble the issues of Ahom, Koch and Jaintia kings and are assigned to Narayandeva and Śatrudaman. He has also proved that the Ahom coins of 1648 A.D. could not be of Pratapsingh and favours the view that they were anonymous like those of Jaintia kings, whose chronology he has revised. He is of opinion that the Jaintia coins were issued at the time of accession of each king and that each date indicated the beginning of the rule of a new king.

Banerji has described some coins with recumbent humped bull and trident and assigned them to four new kings of Arakan. The names of the kings which occur over the bull are Lalitakar, Ramyakara, Pradyumnakar and Anta or Antakara.

Sultans of Delhi.—Coinage of the Sultans of Delhi seems to have received due attention as early as the middle of the last century. Edward Thomas had the honour of proving himself a pioneer in this branch of study. His 'Chronicles of the Pathan Sultans of Delhi' with the supplementary notices held the field for a pretty long time and is still a valuable work of reference. The catalogues of these coins in the Museums at Lahore and London by C. J. Rodgers and S. Lanepoole respectively with the fresh discoveries by other Numismatists recorded in the Proceedings and Journals of the Royal Asiatic Society of Bengal and other scientific periodicals kept the information pouring from time to time. The Indian Museum Catalogue, Vol. II, issued in 1907 was the latest work on the subject when our Society was started. From this back-ground emerged the distinguished scholars, H. N. Wright and H. R. Nevill who after founding this Society flooded the field practically every year with the fresh information and learned observations in the pages of this periodical which has been adopted as the organ of the Society ever since its inception. The location and history of the mint towns of these Sultans by the latter and a summary of all known coins of the five dynasties of these monarchs contained in a series of articles in Supplement No. XXXV by the former with his studied article entitled 'The observation on the Metrology of the early Sultans of Delhi' contributed jointly with the latter in N.S. No. XXXVIII well nigh cover the whole field. A catalogue of these coins in the Lucknow Museum issued in 1925 by R. B. Prayag Dayal and various articles contributed in the pages of this periodical by other members of our Society like J. Allan, R. Burn, B. G. Bleazby, R. B. Whitehead, H. M. Whittell, etc. have also thrown a considerable amount of light on the study of these coins. No less than 35 contributions are contained in various issues of the Numismatic Supplements.

Last but not the least is the valuable publication of 'The Coinage and Metrology of the Sultans of Delhi' incorporating the rich collection of these coins in the Museum of Archaeology at Delhi. It is in fact a corpus of these coins and the last word on the subject. We are glad to note that this up to date and comprehensive contribution is dedicated to our Society at the occasion of its Silver Jubilee.

Sultans of Bengal.—Students of the coinage of Bengal also are indebted to E. Thomas for his exhaustive publications of the 'Initial Coinage of Bengal', Part I (1866) and Part II (1873). This was followed by the Catalogue of the Indian Museum, Vol. II wherein H. N. Wright brought to light certain new types in 1907. W. H. Valentine dealt with the Coinage of Bengal

in his Catalogue of Copper Coins, Part I, published in 1914. Coins and Chronology of the early independent Sultans of Bengal published by N. K. Bhattasali in 1922 is perhaps the text book on the subject. Turning to the file of this Journal we find that H. N. Wright and R. Burn have contributed some articles on the new hoards found at different times which contained some unknown types. Similarly R. D. Banerji, published some unpublished coins and corrected the readings of some in earlier publications. H. R. Nevill brought to light some unknown types of the coins of Ghiyassuddin Bahadur and Mahmud Shah bin Ibrahim Shah. Stapleton's description of a find of 182 silver coins from Raipara of Husaini and Suri Dynasties also merits careful attention as some new coins have been noticed and add considerably to our knowledge. For a study of the coins of the Sultans of Bengal in this Journal a reference to articles Nos. 13, 25, 55, 95, 110, 157, 158, 283 and 284 is invited.

Bahmanis of Gulbarga.—Very little spade work seems to have been done in the earlier years about the coinage of the Bahmani Kings. Notes on some of these coins by H. Blochman, J. G. Delmerick, Gibbs and O'Codrington were published in the issues of the Numismatic Chronicle and the Journals of the Royal Asiatic Societies of Bengal and Bombay. Richard Burn made a few additions to Codrington's Numismatic History of the Bahmani dynasty on the strength of 869 coins found in Betul (C.P.) (*vide* N. S. No. VII). This was followed by Thanawala's note on some rare silver coins. C. J. Brown also noted on two later finds of these coins but no new facts could be gleaned out of them. H. M. Whittell with the evidence of a coin of Alauddin Bahman Shah dated 760, disputed the last date of his reign noted in history. This was followed by a valuable contribution of his in N.S. XXXVII (234) wherein he made an attempt to collect in one paper all available information regarding the known coins of the rulers of this dynasty. This information was supplemented by a note on a gold coin of Alauddin Humayun Shah by Ch. Muhd. Ismail and an article by M. A. Saboor. The latter has discussed at some length the historical facts gleaned from the known coins of this dynasty. Articles 49, 62, 129, 199, 231, 261, and 264 of the Supplements may be seen for details of the above material.

Adilshahis of Bijapur.—The coins of the Adilshahi Kings of Bijapur do not seem to have attracted the attention of many scholars. A glance at the Bibliography of these coins shows that there are only half a dozen articles contributed in the issues of this journal. Rev. Taylor was the first to publish some copper coins and Laris of the Kings of Bijapur (*vide* N.S. XV articles 90 and 91) which was supplemented by his note on three gold coins of Muhammad Adil Shah. T. Streenivas published a fourth gold coin of this king in the report of the Archæological Department of the Nizam's State of 1921-24.

Ch. Muhammad Ismail discussed the epithet Ablābali of Ibrahim Adil Shah which is found on his copper coins in articles 231 and 254. He further gave full and correct readings of the five available gold coins of Muhammad Adil Shah. Nothing more of the coins of this dynasty has yet come to light.

Nizam Shahis of Ahmadnagar.—Practically little is known about the coins of the Nizam Shahi Kings. A solitary attempt by Framji Thanawala at describing about half a dozen copper coins of Burhan I. Murtaza I, and Burhan II of Nagar, Doulatabad and Burhanabad mints is noticed in article 48 of the supplement No. VII.

Qutubshahis of Golkunda.—We have a solitary article No. 64 in our Supplement XI wherein Richard Burn published the coins of Abdullah Qutub Shah and his successor Abdul Hasan with the dates 1068 and 1095 respectively. They bear a legend that is very touching. Some more coins have since come to light but unfortunately they are not yet published.

About the coinage of the Imad Shahi Kings of Berar and the Barid Shahis of Bidar we know very little. Stray coins are noticed here and there.

Sharqis of Jaunpur.—About the coinage of the Sharqi kings of Jaunpur earlier notices by J. G. Delmerick, J. Gibbs and Sherring can be seen in the volumes of the Numismatic Chronicle, Journal and Proceedings of the Asiatic Society of Bengal while in volumes of this Supplement we find but two articles, one by H. R. Nevill about a new copper coin of Jaunpur (*Vide* XXVI-158) and another from the pen of H. M. Whittell in No. XXXVI-228). The latter has discussed at length the history and chronology of these kings with special reference to original authorities and the subsequent notices and has added a catalogue of all the known coins and coin types of the four rulers (Ibrahim, Mahmud, Mahmud and Hussain Shah) of this dynasty including those contained in the catalogue of these coins in the British, Indian and Lahore Museums.

Sultans of Gujarat.—Earlier notices and descriptions of the coins of the Sultans of Gujarat are to be found in Vol. LVIII of the Royal Asiatic Society of Bengal by E. E. Oliver and in the catalogues of these coins in the British and Indian Museums by S. Lanepoole, C. J. Rodgers and H. N. Wright. But a more concentrated and detailed study of these coins was made by that keen collector and enthusiastic student of these coins, G. P. Taylor who from Ahmedabad—the capital of these Sultans despatched the results of his researches to be published in the Journals of the Bombay Branch of the Royal Asiatic Society, (Vol. XXI) as well as in the Numismatic Supplements articles 46, 162 and 200. He was succeeded by another ardent Numismatist Hodivala, who brought a large number of unpublished coins of this dynasty to light (*vide* J.B.B.R.A.S., Vol. II) and discussed the types, metrology and history of these coins in details.

The mystery of the Shah-i-Hind coins was also dispelled by him (*vide* N.S. XL-276). A. Master, K. N. Dikshit (*I.A.*, Vol. XLVII) and T. B. Harwood also made some contributions to the study of these coins (*vide* articles 107, 235, 270). An exhaustive catalogue of these coins in the Prince of Wales Museum, Bombay including all known coins in other private collections and Museums, was issued towards the end of the Jubilee year of the Society.

Khiljis of Malwa.—A student of the coinage of Malwa must be aware of the original work done by J. G. Delmerick published in Vol. XLV of the Journal of the Royal Asiatic Society of Bengal. L. W. King improved upon this material and published the 'History and coinage of Malwa' in two parts in N.C. III and IV (4th series). In his catalogue of coins in the Indian Museum, Calcutta, Vol. II, H. N. Wright has recorded all the coins in the Cabinet of that Museum in 1907. This was supplemented by an 'Addenda', which appeared in N.S. XI-63 two years later. In the light of further coins noticed by him in certain other Museums and private collections he contributed a comprehensive list of the fresh notices in N.C. Vol. XII (5th series). C. J. Brown's note on some copper coins discussed in Balaghat, C.P. (*vide* N.S. XXIV—145) reveals a debased type of these coins current in Gondwana.

The latest contribution on such of the coins, that still remain unnoticed and are acquired for the cabinet of the Prince of Wales Museum from the Hamilton collection, from the pen of C. R. Singhal is appearing elsewhere in this issue.

The Mughal Emperors.—Coins of the Mughal emperors have received the greatest attention of the Indian Numismatists. It may be that partly due to the abundance in which they are found and partly due to the easy identification they afford that comparatively more scholars are attracted towards this branch. Like other coins, those of the Mughals were also noticed in the middle of the last century and certain rich collections were already formed within the next four decades. C. J. Rodgers deserves the credit of being the first to carry systematic research on these coins. It was he who prepared a catalogue of these coins in the Central Museum, Lahore including his own collection purchased by the Punjab Government as early as 1893. This was preceded by the catalogue of these coins in the British Museum by Stanley Lane-poole by only a few months. The former was brought up to date with corrections in previous publications by R. B. Whitehead in 1914 while Addendas to the latter collection are published from time to time by J. Allan and H. Nelson Wright had already published a scholarly volume of the coins in Indian Museum, Calcutta, a couple of years prior to the formation of the Numismatic Society of India. The most comprehensive of the catalogues of these coins is that of the richest cabinet of the Lucknow Museum published by C. J.

Brown in 1924. In this connection mention must be made of the scholarly and illuminating treatise, viz. 'Historical studies in Mughal Numismatics' by Hodivala issued as the second occasional memoir of the Society in 1923, which gives us all that is required for a critical student of Mughal Numismatics. Turning to the file of this journal we find that out of a total of 327 articles recorded in the 45 issues that are out hitherto no less than 145 contributions are made towards the study of Mughal coins by various scholars. G. P. Taylor whose contributions numbering 40 mostly on Mughal coins appear in almost every issue of the N.S. from its very inception to his death in 1920. His keen observation and systematic study of the coins opened a number of topics for research in Mughal Numismatics. Another lot of contributions of outstanding merit come from the pen of Hodivala who from his very first appearance in N.S. XXVII in 1924 made it felt that the knowledge of original and contemporary authorities is very essential for a thorough study of the coins. His scholarly articles based on the knowledge of these authorities with the discussion of the minute details added force and finality to the subject he dealt. His inventory of the Abulfazal's list of Akbar's mints, the discussion of the location and reading of several Mughal Mints, his study of the chronology of the Zodiac coins of Jehangir are typical examples of his scholarship. He has laid the student of Mughal Numismatics under a deep debt of obligation by correcting a number of mistakes in previous publications and affording a reliable guidance to these studies.

Richard Burn with his establishment of types of Mughal Coins and a list of mint towns, Whitehead with his revised list of the same and a notice of many new types, and Wright by his useful notes have provided valuable references for the study of Mughal coins. G. B. Bleazby, Framji Thanawala, Irvine, Vost and Brown are among those who are responsible for bringing a large number of new specimens to light and the discussions of various aspects thereof. As regards the coinage of the later Mughals a large number of mints have been brought to light by various scholars. Several of these need exclusion in view of their assignment to the local authorities by R. G. Gyani. The task of scrutinizing the local history of all such mint towns with a view to assign them to the respective local authorities is yet to be undertaken.

Indian States.—The coins of the Indian States seem to have been considered all along a tough problem and that accounts for the paucity of articles on them. Even a veteran Numismatist like Banerji used to shrug his shoulders at the sight of thick dumpy pieces of Indian States with fragmentary inscriptions in more languages than one. The early attempts of Webb and Valentine in this field as well as the Vol. IV of the coins in the Indian Museum are far from exhaustive and fall far short

of the entire field to be covered. For preparing a Corpus of the coins of States all over India, a number of scholars ought to visit the capitals of these States for examining various coins in the state treasuries and collecting information about the respective mints from state records. Baroda appears to be the only state of which the later coins have been described at sufficient length by Taylor and Gyani. The latter has published several new types and discovered a mint at Amreli in Kathiawar. P. Thorburn has described several coins of Dhoolpur, Bundi, Jodhpur and Manipur from his own collection. A gold coin of Bappa Raval with the Bull, Cow and Calf described by G. H. Ojha and a Hatkeshwar Kori of Junagadh described by Taylor are both unique and deserve special attention.

South Indian Coins.—South Indian coins are equally neglected and excepting Elliot's book with four plates and a few detached articles by Raghav Aiyangar, and M. T. Desikachari there is no guidance for assigning and dating big hoards of gold coins found from Southern India. Kundangar has described few typical coins in the Kolhapur Museum and has shown two distinct types which he designates as Kolhapur and Satavahana types. Martin has assigned three coins from his collection as those of Gautamiputra Sri Satakarni Vasisthiputra Sri Pulumavi and Vasisthiputra Siva Sri Satakarni. J. H. Henderson the author of the coins of Haidar and Tipu Sultans has discussed in a learned article the origin of the Mauludi era and from Tipu's correspondence containing corresponding dates in both the eras he has substantiated his solution. Aiyangar has noticed three new finds of the Padma tankas of the Yadavas of Devagiri from Singhana II (1131^s) to Sri Rama (1193^s) Rajarajachola and two sets of rare coins one of which he connected with Madhava-deva (1208-39 A.D.) who was a subordinate of Kakatiya kings and whose line ruled over Addanki for over 100 years. Rev. H. Heras has made one more attempt to solve some of the South Indian Numismatic puzzles whereas he proposes to assign the so-called Gajapati Pagodas of Orissa as coins of Mallikarjuna of the Vijayanagar dynasty.

Indo European.—H. N. Wright found difficult at the time of examining a treasure trove find of 119 Native styled rupees of Shah Alam bearing the mint name Murshidabad, to definitely fix the year where the native coinage ceased and company's coinage began. He examined the various materials likely to be helpful and ultimately laid down the special features of interest disclosed from the said find. John A. Bucknill has contributed a learned article describing the coinage of the British East India Company's settlement at Penang. There was a welcome attempt at the Danish coins of Tranquebar collected and noticed by Rev. H. Heras.

Miscellaneous coinage and literature.—A. Master who has specialized in Post Mughal coins of Ahmedabad has described

a number of specimens at great length with special reference to various mint marks and ably supplemented the same by a historical survey of that period.

The bibliography of the literature on Indian coins by C. R. Singhal and of Sasanian Numismatics by F. D. J. Paruck have been a great help to workers in the respective fields.

Master's article on 'Arthasastra on Coins and Minting' reviewing the numismatic terms used, and describing the Organization for Coining; H. Stagg's commendable effort at supplying the history and description of His Majesty's Mint at Calcutta, and the Prize Essay on the Monetary System of India at the time of the Muhammadan Conquest by P. N. Bhattacharya, form a scholarly type of literature likely to be useful to future workers in this field.

G. V. ACHARYA.

R. G. GYANI.

INTRODUCTION.

1. The chief source for the study of this period is numismatic. The silver coins, which are of a high degree of rarity, show the most profitable field for research as they are of Sasanian type and are therefore connected with a firm chronological background. On the other hand the gold and base gold coins follow the Kushān style; the type springs from the Late Kushān series the varieties of which have not yet been classified either chronologically or geographically, and which, after an existence of several centuries, merges into the series struck in Kashmir by the Karkotaka or Nāga Dynasty in the seventh century A.D. This series of gold coins, in addition to showing no sharply determined commencement or end, must have been affected by the cataclysmic invasions of India by the White Huns in the fifth and sixth centuries A.D., yet it shows no marked signs of such influence. Its long life indicates that it may have been struck by several dynasties, a supposition confirmed by its findspots, as the writer possesses specimens unearthed as far to the east as Kanauj and Kosam in the U.P., and Prayag Dayal describes in J.P.A.S.B., XXX, 1934, Num. Suppl., XLV, a find of 12 from Hardoi District. For the above reasons this article ignores the gold series and draws its numismatic arguments solely from the silver coins and the few bronze coins of Sasanian type.

2. During the years 1930 and 1931 the writer had the good fortune to add to his collection four small trouvailles of silver coins of the Little Kushān dynasty, including several important and unpublished types. While on furlough in England in 1932 he was greatly encouraged in his study of these by the kindness of Mr. John Allan, Keeper of the Coins in the British Museum, who not only gave him permission to publish any coins in the cabinets under his charge, but also gave him numerous references to publications dealing with the period.

The object of this paper is to publish these recently found coins, to show that Kidāra ruled in the fourth century A.D. and not in the fifth as previously supposed, and to endeavour to reconstruct the history of the period from the scanty historical and numismatic evidence available.

3. This evidence, however, is of such a flimsy nature that few even of the main steps in the argument may be taken as finally proved, though the circumstantial evidence in their favour affords strong grounds for presuming them correct.

Now arguments based on circumstantial evidence cannot proceed with the even forceful flow of pure logic or mathematics.

They must start with a careful sifting of a portion of the evidence from which a theory can be formed only on the broadest lines. This theory must then be tested to see if it is consonant with the remaining evidence, and, if it stands the test, it may then be slightly amplified by a detailed consideration of some other portion of the available evidence. This amplified theory must again be tested, and, if not discredited, may be amplified still further; the process continuing till all available evidence has been utilized.

The writer therefore apologises for the length of this article. Though he could have arrived at the same conclusions in fewer words he has endeavoured to test the results in the light of all the evidence he has been able to trace.

THE CHINESE HISTORIANS.

4. The story of the dynasty can be obtained, in its broadest outlines, from the statements of the Chinese annalists. These however give practically no chronological data and are most obscure in their geographic statements owing to their lack of method in transliterating foreign place-names into Chinese.

Our chief Chinese source is the 'Wei-shu' or annals of the Wei Dynasty (386-556 A.D.) of which I have used Specht's translation. Many extracts from this and from earlier annals were included in the encyclopædia of Ma-touan-lin (13th century A.D.), parts of which have been translated by Remusat and by Julien. For the identification of the Chinese place names I have depended altogether on Marquart.

5. The following extracts have been translated by the writer from the above-mentioned French translators, and a glossary attached giving Marquart's identifications of the Chinese place-names. It must be remembered that the Kushāns, originally a branch of the Yueh-chi confederacy, are habitually referred to by the Chinese under the name "Yueh-chi".

6. *Extract I.*—From Specht's translation of the Wei-shu.

'The Kingdom of the Ta-Yueh-chi has for its capital the town of Lou-Kien-Chi to the west of Fo-ti-cha, at a distance of 14,500 li from Tai. The Ta-Yueh-chi found themselves threatened on the north by the Jouan-Jouan, and were exposed on several occasions to their raids. They therefore migrated to the west and established themselves in the town of Po-lo, 2,100 li from Fo-ti-Cha. Their King Ki-to-lo, a brave and warlike prince, raised an army, crossed to the south of the Great Mountains, and invaded Northern India where the five Kingdoms to the north of Kantho-lo submitted to him.'

Note :—Ma-touan-lin says ‘ *Ensuite, leur roi Ki-to-loetc.* ’ ; which implies that Ki-to-lo was their King at the time of their migration to Po-lo.

Glossary :—

Ta-Yueh-chi	..	Great Kushāns.
Lou-Kien-chi	..	Balkh (Marquart, pp. 88, 89).
Fo-ti-cha ..	..	Bamiān (Marquart, p. 279).
Tai ..	..	The Wei capital in Northern Shansi (Marquart, p. 55).
Jouan-Jouan	..	A tribe in Central Asia akin to the White Huns.
Po-lo ..	..	Balkan. On the north of the old bed of the Oxus where it flowed into the Caspian Sea East of Krasnovodsk (Marquart, p. 55).
Ki-to-lo ..	..	Kidāra. The true form of his name is shown by the Brāhmi script on his coins.
The Great Mountains..		The Hindu Kush.
Kan-tho-lo ..	..	Gandhāra, which corresponds to the modern Peshawar District (Marquart, p. 211).

7. The above does not afford us a clue to the dates of these happenings, and for such we must turn to Ma-touan-lin who gives us a general history of the Great Kushāns. He tells us that after they conquered Northern India under Vima Kadphises (c. 90 A.D.), the Great Kushāns became rich and powerful.

Extract II.—From Julien’s translation of Ma-touan-lin.

‘ They remained in that condition (i.e. rich and powerful) until the time of the Second Han Dynasty (221–263 A.D.) when they found themselves threatened on the north by the Jouan-Jouan and were exposed on several occasions to their raids.’

8. The Chinese Annalists do not carry the story of the Great Kushāns beyond Kidāra’s invasion of India, so we must now consider their statements regarding the Little Kushāns.

Extract III.—From Remusat’s translation of Ma-touan-lin.

‘ The capital of the Little Yueh-chi is the town of Fou-leou-cha. Their king was a son of Ki-to-lo ; he was placed in charge of this town by his father when this prince was forced, by the attacks of the Jouan-Jouan, to march Westwards.

Glossary :—Little Yueh-chi Little Kushāns.

Fou-leou-cha .. Peshawar (Marquart, p. 211).

Extract IV.—From Specht's translation of the Wei-shu.
 'Kidāra, having been pursued by the Hiung-nu, and having retired to the West, ordered his son to establish himself in this town of Fou-leon-cha. These people are consequently called Little Yueh-chi.'

Note. :—Specht notices that the Wei-shu refers here to the Hiung-nu while T'ong Tien and Ma-touan-lin both say Jouan-Jouan.

9. The Chinese give no further historical details about the Little Kushāns, but, in describing their country, state that merchants from it introduced great improvements in glass-making into China in the time of the Second Wei Dynasty, during the reign of Tai-von (398–409 A.D.). This suggests that the establishment of the Little Kushān Dynasty in Gandhāra should be dated prior to 409 A.D.

10. We have now got a sketch of the history of the Little Kushān Dynasty in its broadest outlines.

At some period between 221 A.D. and 409 A.D. a branch of the Great Kushāns was driven from Bactria by the Jouan-Jouan and dispersed in two directions :—

- (a) Westwards, along the northern borders of the Sasanian Empire towards the Caspian,
- and (b) Southwards, across the Hindu Kush into Northern India.

This southern branch was led by Kidāra and occupied Gandhāra. At a later period Kidāra again felt pressure from some Central Asian tribe, about the name of which the Chinese felt some uncertainty, and, leaving his son in Peshawar, moved westwards to resist them.

As it is highly improbable that the Kushāns, who were not strong enough at the time to hold Bactria, could have kept up intimate contact between their branches in India and on the Caspian, I assume that Kidāra's dominions stretched westwards from Gandhāra along the basin of the Kabul River and so he transferred his army from Peshawar to Kabul in order to prevent his foes from crossing the Hindu Kush from Balkh (see para. 38 below). He therefore left his son in Peshawar, as ruler of his eastern provinces.

The Chinese do not tell us the history of the later Little Kushān Kings in Peshawar.

THE KUSHANO-SASANIAN RULERS IN BACTRIA.

11. The above wide chronological limits for the date of the dispersal of the Kushāns from Bactria can be narrowed considerably by a study of the Kushano-Sasanian coin series.

Professor Herzfeld has divided these into two groups :—

- (a) Those struck by Princes of the Sasanian Royal Family as Viceroy in Balkh and Merv. These bear the title ' King of Kings of the Kushāns '.
- (b) A later series struck by provincial governors, bearing the title ' King of the Kushāns '.

The Kushāns cannot have been driven from Bactria by the Jouan-Jouan till the end of this later series, and Sasanian rule in Bactria can scarcely have survived the upheavals accompanying this dispersal.

Further, the known history of the Sasanian Empire must refer in some way to these disturbances.

12. Herzfeld has shown that the first series continued from about 230 A.D. to 284 A.D., when, on the Sasanian conquest of Sakastān, the heir-apparent was transferred as Viceroy to that province, and that the second series commenced at that date and continued to some point in the reign of Shapur II (309–379 A.D.).

Ammianus Marcellinus tells us that Shapur II was engaged in wars on his eastern borders from about 350–358 A.D., the Kushāns being named among his opponents (see para. 20 below) and Herzfeld has suggested (' Kushano-Sasanian coins, p. 36) that this series of coins may have continued up to the end of these wars.

I therefore assume, as a working hypothesis to be tested by the evidence of the Little Kushān coin series, that the Eastern wars of Shapur II which ended in 358 A.D. were directly caused by the dispersal of the Kushāns from Bactria and that this date occurred during the reign of Kidāra.

PRELIMINARY CONSIDERATION OF LITTLE KUSHĀN COINS.

13. I have already explained (para. 1 above) that the silver and bronze coins of the Little Kushāns show the most profitable field for research. General Cunningham published some of these in Num. Chron., 1893, accompanied by a plate (No. VI) on which Nos. 1, 2, 5, 6 and 7 are silver coins and Nos. 8 and 9 are copper or bronze. Another silver coin was published by Mr. Vincent Smith but was allocated incorrectly to the main Sasanian series (Indian Museum Catalogue, Vol. I, 1906, Plate XXIV, No. 8). The plates accompanying this article show the above coin types and all other varieties known to the writer, with the exception of some of the copper coins of Tarika which are too poorly preserved for reproduction.

14. The objects of this preliminary study are as follows :—

- (a) To pick out those coins which must belong to the main dynasty and not to provincial governors.

- (b) To determine the order of succession of the rulers of the main dynasty on stylistic grounds,
and (c) To test whether the coins support the assumption made in para. 12 that the dynasty flourished in the latter half of the fourth century A.D.

15. Of the silver coins five types are closely inter-linked :—

Kidāra type I	..	..	Pl. I, Nos. 1, 2.
Kidāra type II	..	..	Pl. I, Nos. 4, 5.
Piro type I	..	..	Pl. I, Nos. 15, 16, 18 and Pl. II, Nos. 19–21.
Piro type II	..	..	Pl. II, Nos. 22 and 23,
and Varahrān	..	..	Pl. II, Nos. 26, 29 and Pl. III, Nos. 30–36.

The arrangement of these coins presents little difficulty. All are found in North-Western India, all are of the same dynasty, and we know from the Chinese annalists the Kidāra was the first of his dynasty to rule in India.

The two types with full-faced bust, Kidāra type II and Piro type I are closely connected with one another. A detailed stylistic comparison of all the types is given in Appendix II to this paper, but at this stage it is only necessary to refer to the following salient points which are common to these two types :—

- (a) Full-faced bust.
(b) Obverse legend in Brahmi script.
(c) Shoulders draped with palmettes.
and (d) Fire-altar on reverse has bust of Hormizd appearing in the flames.

Among the coins at present known, Piro type I shows closer kinship with Kidāra type II than is shown by any other coin. We may therefore assume that Kidāra and Piro were next to one another in dynastic succession and that type I of Kidāra preceded type II. This point is amplified in para. 27 below.

It appears in consequence that Piro was the son to whom Kidāra committed the charge of Peshawar.

15. Next, comparing the two types of Piro's coins, we see they have the following points in common :—

- (a) A crown of two rams horns surmounted by a fluted globe with flanking fillets.
(b) Beard passed through a ring.
(c) Shoulders draped with palmettes.

The coins of Varahrān are very similar to Piro type II. Though the crown is different it is again surmounted by a fluted globe with flanking fillets. The beard is again passed through a ring and the shoulders of both are draped with palmettes.

These considerations make it a reasonable assumption that Varahrān succeeded Piro in Peshawar.

16. The remaining coins illustrated in plates IV and V do not appear to have been struck by the main dynasty, but by provincial satraps or governors owing allegiance either to the Little Kushāns or to the Sasanians. This point will be discussed more fully in paragraphs 25 to 28.

17. It will be seen that the first type of Kidāra shows the King's face to the right in accordance with the usual Sasanian practice. His second type, however, as does the first type of Piro, shows a full-face portrait; while the second type of Piro and the coins of Varaharān show a reversion to the previous class as their portraits face to the right.

These variations have a deep historical significance as they indicate the fluctuating political relationships between the Little Kushāns and the Sasanian Empire. Professor Herzfeld has shown on pages 3-5 of his memoir on Kushāno-Sasanian coins that :—

‘The direction to the left was the Arsacid one and all the feudal princes who had the royal right of coining and whose lands formed an integral part of that curiously diffuse empire, had to adopt the Arsacid style. The opposite direction of the head proves a greater degree of independence, and hence is adopted by the Sasanids immediately after they had thrown off the Arsacidan yoke.’

Herzfeld also drew attention to the fact that rebels against the Arsacid rule, up to and including Ardeshir I during his actual rebellion against Artabnus V, struck coins bearing a facing portrait. Further, he showed that the same custom, *mutatis mutandis*, was followed in Sasanian times; the suzerain dynasty striking coins with their heads to the right, feudatory princes following their example, while rebels and independent princes struck coins with portraits either full-face or to the left.

Applying this rule to the coins under discussion, it will be seen that Kidāra was at first feudatory to the Sasanian empire, that he later became independent and that, during the reign of Piro, the Sasanians reasserted their claim to suzerainty, as this king, and his successor Varaharān both struck coins with their portraits to the right in acknowledgment of this claim. The change in legend from Brahmi to Pehlevi which occurs at the same time as this change in direction on Piro's coins confirms that Sasanian influence was strong in Gandhāra at this period.

18. The fact that the reigns of Kidāra and his successors Piro and Varahrān should be referred to the latter half of the fourth century A.D. is clearly demonstrated by the following points :—

- (a) Type I of Kidāra is directly copied from coins of the middle period of Shapur II. It is slightly excep-

- tional in the great breadth of the crenellations on the crown; in this respect the nearest analogy is to the copper coin with Greek-Kushān legend 'ποβοπο'. (Cunningham N. C., 1893, plate IV, 9) which Herzfeld (l.c. p. 37) refers to Balkh during the first period of his reign. (See also para. 21.)
- (b) The satrapal coin, Pl. V, No. 54, is closely connected with the same copper coin of Shapur II, by the arch of pearls which surmounts the central crenellation of each crown.
 - (c) The satrapal coin, Pl. V, No. 56, bears a crown modelled on that of Ardeshir II (379-383 A.D.).
 - (d) The satrapal coins, Pl. V, Nos. 55 and 67-71, bear crowns modelled on that of Shapur III (383-388 A.D.).
 - (e) Find No. V, described in Appendix III to this paper, contained two coins Varahrān IV (388-399 A.D.).
 - (f) Find No. VI contained coins both of Shapur III and Varahrān IV.
 - (g) The reverses of Kidāra type II and of Piro type I show supporters facing the altar with swords at the 'carry', and, in addition, a bust of Hormizd in the flames on the altar. These coins can only be referred to the fourth century A.D. as these points occur in the main Sasanian series only on coins of Shapur II to Varahrān IV.
 - (h) No coins of Yazdegerd I (399-420 A.D.) appear to have been found in conjunction with coins of this dynasty.

19. From the testimony of the Chinese historians and of the coins it would appear that Kidāra flourished about the middle of the fourth century A.D., and, in addition, the coins show us that he was at one time tributary to Shapur II but later became independent. It appears that some echoes of these events are preserved by contemporary historians and by an inscription recently discovered by Professor Herzfeld at Persepolis.

STATEMENTS BY CONTEMPORARY HISTORIANS.

20. Ammianus Marcellinus, an officer in the Roman Army who fought against Shapur II in Mesopotamia, tells us that from 350 to 385 A.D. this monarch was occupied in war against tribes on his eastern frontier and that his most important opponents were the Chionitæ and Euseni. The latter name has long been recognized as a textual corruption for Cuseni or Kushāns. In 358 A.D. Shapur made peace with these tribes

and picked a quarrel with Rome. In 359 A.D. he invaded Mesopotamia and besieged the Roman fortress of Amida, the modern Diarbekr, where he was assisted by contingents of his former foes. The text of this passage (Ammian 19; 2, 3) is, unfortunately, very corrupt, but for the reading which restores the Cuseni or Kushāns as one of the contingents before the walls of Amida cf. Marquart's 'Erānšahr', p. 36, Note 5.

21. Professor Herzfeld (*l.c.*, page 36) has found an inscription at Persepolis dated in the year 47 of Shapur II, corresponding to 356 A.D. This was written by Slōk, High Judge of Kabul who prayed that Shapur would return to Kabul in safety. This, taken in conjunction with Ammian's statement that Shapur II spent the winter of 356-57 A.D. in the furthestmost limits of his Kingdom, on the borders of the Chionitæ and the Euseni shows that Kabul was Shapur's base for the campaign of 356 A.D., and was near these tribes.

Now Kabul is an excellent base for operations against Gandhāra but is not nearly as suitable as Herat for operations north of the Hindu Kush. The operations of 356 A.D. were probably chiefly directed against Gandhāra, which indicates that Kidāra had already occupied that area.

Sir John Marshall has found several of the Merv coins of Shapur II mentioned in para. 18(a) above in excavations at Taxila (see ASI-AR, 1914-15, Nos. 48 and 49 and ASI-AR, 1915-16, Nos. 51 and 52). These may have been brought down to India during the Little Kushān invasion. They were the coins current in Bactria immediately preceding the date I assume for Kidāra's occupation of Gandhāra.

22. Professor Herzfeld (*l.c.*, page 50) attributes certain coins to the Chionites. These coins, one of which Cunningham illustrated (Num. Chron., 1894, Pl. VII, 1) bear a bust to the right, wearing the headdress of Shapur II, and, as they are very similar to the Merv coins of Varahrān V, they were probably struck there.¹ As the direction of the bust shows that the Chionites were tributary to the Sasanians Professor Herzfeld has attributed these coins to the period immediately following the peace of 358 A.D. For identical reasons I would assign the first type of Kidāra's coins, which are of Gandhāra provenance, to the same period. As a natural corollary it follows that the Euseni or Cuseni of Ammian were the branch of the Great Kushāns led by Kidāra, whose invasion of Gandhāra must have taken place before 356 A.D. I am of opinion that this invasion

¹ If the Chionites were in occupation of Merv at a period when the Jouan-Jouan had just occupied Bactria, it is probable that both names are identical. Herzfeld (*l.c.*, p. 19) read the tribal name on the Chionite coin as 'OIONO'—Avestan 'hyaona', Parisk 'Xiyonan', Latin 'Chionitæ'. The Chinese 'Jouan' is very similar, and perhaps identical with these other forms.

and the contemporary move of another portion of the tribe from Balkh to the Caspian were the immediate cause of the Eastern wars of Shapur II, and I would therefore date Kidāra's invasion of India at circa 348-50 A.D., and his subjugation by Shapur II in 358 A.D.

23. The Armenian historian Faustos of Byzantium refers on two occasions (Book V, Chaps. 7 and 37) to warfare between the Kushāns and Sasanians in 367/8 A.D. From these it would appear that the Kushāns were the aggressors and inflicted two crushing defeats on the Sasanians, annihilating one of their armies and, on another occasion, forcing Shapur II to fly for his life from the field of battle.

As we know from the coins that Kidāra, after a period of allegiance to Shapur II, later became independent. I would suggest that the events referred to by Faustos were the immediate result of Kidāra's declaration of independence which I would consequently date in 367/8 A.D. Cunningham read the reverse legend of type II of Kidāra's coins as a date, either 239 or 339, and referred these dates to the era of Kanishka. If the former reading is correct, and if Sten Konow is correct in dating Kanishka's Accession in 128/9 A.D., then 239 plus 128/9 equals 367/8, the exact date of the war Faustos tells us about. I do not, however, stress this coincidence as both the reading of the coin and the date of Kanishka are controversial points.

24. From the above it would appear that the branch of the Great Kushān race which had remained in Bactria and which had come under Sasanian domination about 230 A.D. was threatened during the third century A.D. by the Jouan-Jouan, a Central Asian tribe which was massing on their northern borders. This pressure gradually increased, and towards 350 A.D. forced the Kushāns out of Bactria. A portion of the tribe migrated westwards towards the Caspian and a second portion, under their King Kidāra, invaded India and settled in Gandhāra. These movements caused a general unrest among all the tribes on the North-Eastern border of the Sasanian empire, which Shapur II was forced to quell by series of punitive expeditions between 350 and 358 A.D.

During these years he conquered the Little Kushāns and Chionitæ as well as the Albani, Vertæ and Segostani. In 358 A.D. Shapur II made peace with these tribes, whose leaders acknowledged fealty to him and assisted him on his invasion of Mesopotamia in 359 A.D. Coins have been found, struck during the years immediately following, on which, by the direction of portraiture, the Chionites and the Kushān Ruler, Kidāra show their status as feudatories to the Sasanians. Kidāra, however, appears to have rebelled at an early opportunity and to have asserted his claim to independence by a successful campaign against Shapur II in 367/8 A.D. On attaining independence he struck coins bearing a full-face portrait.

THE SATRAPAL COINS.

25. Before attempting to discuss the extremely meagre data available for reconstructing the later history of the main Little Kushān dynasty it will be advisable to consider a series of coins which appear to have been struck by provincial governors or satraps.

These coins are mostly of silver but a few, which appear to have been found only in Bannu District, are of copper. The copper coins alone bear the title of Satrap and all legible specimens are of one ruler, Tarika.

A number of silver coins are illustrated on plates IV and V. These have the same flat fabric as the coins of Kidāra, Piro and Varahrān and some have been found on several occasions in conjunction with them. Stylistically they are obviously of the same period but their points of dissimilarity are so many that they appear to have been struck by provincial governors in different areas and not by Kings of the main dynasty.

26. These satrapal coins are readily divisible into two classes according to the direction in which the portraits face and some can be given an approximate date when they copy the head-dress of the ruling Sasanian emperor.

Coins numbered from 43 to 55 in the catalogue (Appendix I) form the first class as all show a full-faced portrait. They are akin to the full-face type of Tarika in many respects, notably in the fact that their busts are not draped with palmettes. As Tarika definitely calls himself a Satrap it is probable that these others held similar rank.

27. Reference is invited to the second table in Appendix II which shows in tabular form the major stylistic differences in the coins under discussion. Attention is drawn to the very gradual sequence of changes by which the type Varahrān is evolved from type I of Kidāra, through the latter's second type and through both types of Piro. The salient point in the comparison of these five types is that coins of Kidāra type II and of Piro type I show identical treatment in respect of ten of the eleven stylistic points which are compared in the table, Piro having a beard while Kidāra has none.

Now, turning to the satrapal coins which show a full-faced portrait, it will be noted that the many variations from the style of the main dynasty preclude the possibility of including one or more of these rulers in the main line of succession without serious disturbance to the sequence of changes which we have just traced. At the same time it must be remembered that these rulers all show a full-faced portrait and all must therefore belong to the period when the main dynasty was independent. Consequently if any one of these rulers were to belong to the main dynasty he could only be inserted as the successor of Kidāra and the predecessor to Piro. The fact that Kidāra type II and Piro

type I are so nearly identical in style precludes the possibility of inserting any ruler at this point, and confirms the theory that the coins under discussion were struck by provincial governors.

It should be noted that coin No. 55 of this group bears a headdress modelled on that of Shapur III and must consequently date from the period of his reign (383–388 A.D.). The series may, in consequence, be dated as between the rough limits of 368 and 385 A.D.

28. The second class of silver satrapal coins consists of numbers 56 and 67–71 in the catalogue. These appear to be a continuation of the first class with the notable difference that the portraits now follow the normal Sasanian type in facing to the right. They were struck by governors owing allegiance to the Sasanian monarch either directly or indirectly through Piro or Varahrān during their period of subservience to the Sasanian power.

It is noteworthy that the head-dresses of all are copied from those of Sasanian rulers, a point which suggests that they were direct feudatories of these kings and ruled over districts conquered by the Sasanians from the Little Kushāns.

The period of Sasanian expansion must have commenced during the reign of Ardeshir II (379–383 A.D.) and have continued during that of Shapur III (383–388 A.D.) as coin No. 56 bears the head-dress of Ardeshir II and the remainder bear that of Shapur III.

29. Professor Wilson states that Shapur III was entitled 'The Warlike' and conjectures (*Ariana Antiqua*, p. 387) that:—

'As he preserved the peace with Rome, he must have indulged his martial propensities at the expense of his neighbours in the East. It is not improbable that he effected some conquests in that direction.'

Wilson also stated that coins of Shapur III were found in the relic chamber of the Great Tope at Hidda 'in considerable proportion' (*Ar. Ant.*, pp. 43 and 387); a remarkable fact when we remember that 'We do not find the coins of the second Sapor in Afghanistan in any numbers, though there are a few' (*Ar. Ant.*, p. 386).

Even further to the East the writer has seen two small finds, evidence of renewed Sasanian influence at this period. The first from Hashtnagar in Peshawar District contained two coins of Shapur III and four of Varahrān IV; the second of unknown provenance but seen in Rawalpindi City, contained one coin of Ardeshir II, four of Shapur III and two of Varahrān IV. The dealer owning this second lot was not in the habit of importing coins from Afghanistan.

Again, coins of Shapur III and Varahrān IV appear in conjunction with those of the Little Kushāns in the 5th and 6th

finds described in Appendix II to this paper. During six years of coin-collecting on the N.W. Frontier the writer has seen only a few other isolated specimens of Sasanian coins of earlier date than Firoz.

Wilson also comments (*Ar. Ant.*, pp. 383-387) on the scarcity in Afghanistan of all Sasanian coins prior to Shapur III.

30. The above indications of Sasanian expansion towards India during the reign of Shapur III, combined with the fact that no coins of Yezdegerd I (399-420 A.D.) or his successors have been found in conjunction with those of the Little Kushāns, indicate that Shapur III was the monarch who forced Piro to acknowledge fealty to the Sasanians.

We have no direct evidence to show us the date on which Kidāra left Gandhāra in the charge of his son Piro, or when the latter was subdued by Shapur III. The only indication that we have is that coins of Kidāra type II appear commoner than those of Piro type I and may have been struck over a longer period. This suggests that Piro's accession may have occurred between 375 and 380 A.D. and no closer approximation can be offered.

THE EARLY WHITE HUNS.

31. I have already suggested, in paras. 18 and 30, that the Little Kushān dynasty was extinguished in Gandhāra about 400 A.D. It also appears that Sasanian influence in this area waned at the same period: for, though satrapal coins have been found bearing the head-dresses of Ardeshir II and Shapur III none show those of Varahrān IV and his successors. Further, the latest Sasanian coins of this period which are found on the Indian frontier were struck by Varahrān IV (388-399 A.D.).

The natural way to explain these facts is to assume that some other power had overrun Gandhāra by about this date. The wars of Chandragupta II against the Sakas appear to have been directed against the Western Satraps and not against the Sakas of the Punjab. (*Vide* Altekar 'A New Gupta King', *J.B.O.R.S.*, 1928, Vol. XIV, pp. 223-254.) So we must turn our attention to Central Asia, bearing in mind that the Chinese historians attribute Kidāra's abdication from Gandhāra to the fact that his western provinces were attacked by a Central Asian tribe which conflicting sources name Huang-Nu and Jouan-Jouan.

32. There is little doubt that the Central Asian invaders in question were the White Huns, or Ephthalites, who established large empires in North India, Afghanistan and Turkestan during the fifth and sixth centuries A.D.

The Chinese tell us that the original name of this people was Hoa, and that they were at first a sub-division of the Jouan-Jouan but later became independent.

The most important branch of the White Huns as far as India is concerned appears to have been the Zabuli tribe which

gave its name to the province of Zabulistan to the South of Kabul. The tribal name appears on the coins in the Greek Kushan script as 'Zobol' and in Brahmi as 'Jabula', 'Jaūvla' and 'Jabuvlah' and, in the Kyura inscription of Toramana as 'Jaūvla'; and a study of the earlier Zabuli coins (*vid* para. 37 below) appears to show that they were established on the Indian borderland towards the close of the fourth century A.D.

33. Among the most important finds of early White Hun coins is the deposit discovered by Masson in the Great Tope at Hidda near Jelalabad in the Kabul Valley.

This hoard has never been analysed with accuracy and has unfortunately been dispersed, but it appears from the description given in *Ariana Antiqua*, pages 396-399, that, though it included several coins dating from the latter half of the fifth century, the great majority, at any rate of the Sasanian issues, were struck in the closing decades of the fourth century. This is a strong indication that many of the White Hun coins in this deposit should be referred to the same period.

Most of the White Hun coins found in this Tope are of the thin broad class with strongly repoussé heads. The greater proportion of these have legends in the Greek-Kushān script, some having, either alone or in addition to a Greek legend, occasional Brahmi characters in the field.

Dr. Heinrich Junker has read some of these Greek-Kushān legends and finds that the coins are Zabuli issues of Balkh mintage.

34. As these Balkh coins bear legends solely in the Greek-Kushān script it follows that those bearing isolated Brahmi characters must have been struck south of the Hindu Kush.

This supposition is supported by the discovery of Mr. Hargreaves, in archæological excavation at Peshawar, of a hoard of very similar coins bearing Brahmi isolated characters. This hoard has been described by Mr. Whitehead in *J.P.A.S.B.*, Num. Suppl., XXI, pp. 481-483, and the writer has obtained duplicates of these in Peshawar District.

35. That the White Huns had raided as far as Peshawar prior to 400 A.D. is suggested by a legend recorded by Fa-Hsien that an Ephthalite king had 'formerly endeavoured' to remove Buddha's begging bowl from Peshawar, but had been foiled by a miraculous exhibition of passive resistance on the part of the relic.

The Chinese pilgrim Fa-Hsien described his visit to Gandhāra in the first decade of the 5th century A.D. and the legend is given in full on page 14 of Giles' translation.

36. The early Zabuli coins of the classes referred to in paras. 33 and 34 have, in almost all cases, their reverses totally obliterated by the deeply repoussé obverse head.

On only a few coins are the details of the reverse at all

clear, and a large percentage of these (e.g. Whitehead, Num. Suppl., XXI, No. 18) show a bust of Hormizd appearing in the flames surmounting the first-altar, which is a fourth century characteristic as shown in para. 18 above.

Another Zabuli coin (Cunn. l.c. VII, 2) which from its similarity to the Merv coins of Varahrān V appears to be of Merv mintage, was undoubtedly struck during the fourth century as it is copied from the coins of Varahrān IV.

37. The evidence discussed in the preceding paragraphs indicates that prior to the close of the fourth century the White Huns had struck coins in Merv, Balkh and south of the Hindu Kush and had even penetrated as far as Peshawar, though this appears to have been little more than a raid. It is therefore reasonable to assume that it was the gradual advance of this people that threatened the Western dominions of Kidāra and forced him to leave Gandhāra to his son Piro, and that the same invaders succeeded, about the beginning of the fifth century, in ousting the Little Kushāns from Peshawar District and putting an end to Sasanian domination in that area.

CONCLUSION.

38. We are now in a position to continue the summary of the history of the Little Kushāns from the point at which we left them in para. 24.

It appears that Kidāra, after throwing off the Sasanian yoke in 368/8 A.D., established a large empire. The Chinese annalists says that five districts to the North of Gandhāra submitted to him and the coins of Tarika show that his Indian dominions stretched South as far as Bannu.

At the same time, the statement of the Chinese that he established his son as King in Gandhāra and moved to the West when pressed by some Central Asian tribe (which I have shown to be the White Huns) can only be explained by the assumption that he ruled over a considerable area to the West of Gandhāra. If this western extension of his kingdom included Kabul it is only natural that he should transfer his capital there to resist invaders from Balkh, leaving a Viceroy at Peshawar to govern his Indian dominions. One should remember that Gandhāra cannot be threatened seriously by Central Asian invaders except from the West.

We know from the Chinese that Kidāra set up his son in Gandhāra and the coins (see paras. 15 and 27) show that this son was Piro. The date of this abdication (see para. 30) cannot be fixed but it was probably between 375 and 380 A.D.

39. We have no record of the wars between Kidāra and the White Huns beyond the fact that the latter were ultimately successful. While the Kushāns were engaged in these wars the Sasanians seem to have taken the opportunity of extending

their Eastern dominions. Ardeshir II reconquered at least one district over which he set a satrap (coin No. 56), and Shapur III, in addition to annexing several other districts (coins 67-71) forced Piro to acknowledge his suzerainty in Gandhāra. Varahrān, who succeeded to Piro, was also a vassal of the Sasanians.

The triumph of the Sasanians, was, however, shortlived, for their recently conquered provinces in Kabul and Gandhāra were overrun by the White Huns, apparently about 400 A.D. Sasanian influence disappears from Gandhāra about this date and it appears that the Little Kushāns retreated into the mountains around the Upper Indus Valley and Kashmir. It is not, however, proposed to trace the history of the Little Kushāns beyond this point.

40. It is realized that the above reconstruction is based on the most flimsy evidence. It is not a structure built around a firm framework of concrete fact, but a fabric woven from many threads, any one of which, alone, may be easily snapped.

At the same time it is a theory which appears to fit in with every known fact. It is consonant with the recorded statements of Ammian, Faustos and the Chinese historians. It explains the cause of the Eastern wars of Shapur II, the inscription of Slōk, High Judge of Kabul, and the soubriquet 'The Warlike' earned by Shapur III, and, in addition, all known coins, all recorded findspots and all variations in script and portraiture are woven into the fabric.

41. I wish to record my grateful acknowledgment of the help given me by Mr. J. Allan of the British Museum, who guided my readings, permitted me to study his cabinets, and prepared the casts and photos for the accompanying plates; by Mr. R. B. Whitehead who permitted me to read his manuscript chapter on the White Huns, which will shortly appear in Volume II of the Cambridge History of India; and by Mr. Dikshit and the staff of the Indian Museum, Calcutta, who deciphered the legends of the coins illustrated on the accompanying plates.

APPENDIX I.

CATALOGUE OF COINS.

Part I. Main Dynasty.

KIDĀRA.

Type I. ♂ Drachm.

Obv. :—Bust of king to right, diademed, ends of diadem floating upwards behind head ; wearing mural crown with three crenellated turrets, as shown on coins of Shapur II ; crown adorned with floating fillets and central crenellation surmounted by crescent and fluted globe ; bushy hair, no beard ; wears ear-ring, necklace ; bust ends in four lobes ; grenetis. Brahmi legend (commencing 2 o'clock) :—

' Kidāra Kushāna Shā.'

Rev. :—Fire-altar with triple base and capital, fillet adorning shaft ; surmounted by flames in which bust of Hormizd appears to right ; on either side attendant, facing altar, holds sword at the carry ; grenetis.

- | | | | | |
|--------------|---------------|-----|------------------------------|---------------------------------|
| 1. (Plate 1) | Wt. 55.7 grs. | R | In exergue Br. :
' Sha '. | Author, Hoard IV. |
| 2. (Plate 1) | Wt. 51.5 grs. | do. | .. | Author, Hoard III. |
| 3. | | do. | .. | Electro-type in British Museum. |

Type II. ♂ Drachm.

Obv. :—Bust of king facing, diademed, ends of diadem floating upwards from shoulders ; wearing crown with three foliate ornaments, the centre one having five plumes and the flankers three each ; crown adorned with floating fillets and fluted globe ; bushy hair on either side of neck, no beard ; wears ear-ring and necklace ; shoulders draped with palmettes ; grenetis.

Brahmi legend (commencing 10 o'clock).

' Kidāra Kushāna Shā.'

Rev. :—As on Type I.

- | | | | | |
|--------------|---------------|-----|--|--|
| 4. (Plate 1) | Wt. 48.9 grs. | R | In exergue unread Brahmi legend which may be a date. | Author, Hoard III. |
| 5. (Plate 1) | Wt. 53.0 grs. | Do. | .. | Author, Hoard III. |
| 6. | Wt. 56.0 grs. | do. | .. | British Museum ex-Cunningham collection 1894 published in Num. Chron. 1893 Plate XV. 1. |
| 7. | Wt. 56.0 grs. | Do. | .. | Do. do. Plate XV 2. |
| 8. | | Do. | .. | Do. Ex Cunningham collection 1894 unpublished. |
| 9. | | Do. | .. | Excavated at Taxila vide A.S.R. 1915-16, p. 36 item 1. |
| 10-14. | | Do. | .. | Excavated at Jaimalgarhi vide A.S.R. (Frontier Circle) 1920-21, Appendix V items 140, 263 and 264. |

PIRO.

Type I. A Drachm.

Obv. :—Bust of King, facing, diademed, ends of diadem floating upwards from shoulders; wearing crown with two ram's horns curving outwards and central foliate ornament of five plumes; crown adorned with floating fillets and fluted globe; bushy hair on either side of neck, small moustache, beard with end passed through ring; wears ear-ring and necklace; shoulders draped with palmettes; grenetis.

Brahmi legend : left, 'shā'.

right, 'Pirosa'.

Rev. :—Fire-altar with triple base and capital, fillet adorning shaft; surmounted by flames in which bust of Hormizd appears to right; on either side attendant, with plumed head-dress, faces altar with sword at the carry; grenetis.

- | | | | |
|---------------------------------|---|-----------------------------|-------------------|
| 15. (Plate 1) | R | In exergue Brahmi 'na' .. | Author, Hoard VI. |
| | | To right, Brahmi 'Piladha'. | |
| 16. (Plate 1) | R | In exergue, Brahmi, 'na' .. | Author, Hoard V. |
| 17. Broken, $\frac{1}{2}$ coin. | | Do. .. | Author, Hoard IV. |

Type I (a).

Obv. :—As type I but Brahmi legend varied :—
right 'shāhi' left 'Piro'.

Rev. :—As type I.

- | | | | |
|---------------|---|--|-------------------|
| 18. (Plate 1) | R | In exergue, Brahmi 'na' .. | Author, Hoard VI. |
| | | To right, Brahmi 'Piladha'. | |
| 19. (Plate 2) | | Do. .. | Author, Hoard VI. |
| 20. (Plate 2) | R | In exergue, Brahmi, 'na' .. | Author, Hoard V. |
| | | To right, indistinct Brahmi characters commencing with 'ba'. | |
| 21. (Plate 2) | | Do. .. | Author, Hoard V. |

Type II. A Drachm.

Obv. :—Bust of King to right, diademed, ends of diadem floating upwards behind head; wearing crown with two ram's horns curving to back and front and central foliate ornament of three plumes; crown adorned with floating fillets and fluted globe; bushy hair behind neck, small moustache, beard with end passed through ring; wears ear-ring and necklace; shoulders draped with palmettes; grenetis.

Before face :—Brahmi 'Pi'.

Pehlevi legend (commencing 4 o'clock) :—

Rev. :—Fire-altar with triple base and capital, fillet on shaft, surmounted by flames; on either side attendant, with close-fitting broad-brimmed head-dress facing altar with sword at the carry; grenetis.

- | | | | |
|---------------|---|----------------------------|-------------------------------------|
| 22. (Plate 2) | R | In exergue, Brahmi 'na' .. | Author, Hoard V. |
| 23. (Plate 2) | | Do. .. | Author, Hoard VI. |
| 24, 25. | | Do. .. | British Museum, ex Major Hay, 1860. |

VARAHRĀN.

Type I. *Æ* Drachm.

Obv. :—Bust of King to right, diademed, ends of diadem floating upwards behind head; wearing crown with foliate ornaments, showing three, five and three plumes respectively; crown adorned with floating fillets and fluted globe; bushy hair behind neck, small moustache, beard with end passed through ring; wears ear-ring and necklace: shoulders draped with palmettes; grenetis.

Pehlevi legend (commencing 4 o'clock) :—

'Lur Varahrān'.

Rev. :—Fire-altar with triple base and capital, fillet on shaft; surmounted by flames; on either side, attendant, wearing close-fitting, broad brimmed head-dress, facing altar with sword at the carry; grenetis.

- | | | | |
|---------------|----|----|---|
| 26. (Plate 2) | .. | .. | Author, Hoard V. |
| 27. | | | Indian Museum,
Calcutta, Plate
XXIV 8. Repub-
lished Paruck XIII
296. |
| 28. | | | British Museum, ex
Deane, 1919. |

Type I (a). As on Type I but legend 'Varahrān or 'Varahrān apzūn'

- | | | | |
|--------------------|--------------------------------------|-------------------|---|
| 29. (Plate 2) | <i>Obv.</i> :—To right, Brahmi 'Pi'. | | |
| | R In exergue, Brahmi 'Nā'. | Author, Hoard VI. | |
| 30. (Plate 3) | R In exergue, Brahmi 'Nadaya'. | Author, Hoard V. | |
| 31, 32. (Plate 3). | R In exergue, Brahmi 'Nadaka'. | Author, Hoard V. | |
| 33-36. (Plate 3) | R In exergue, Brahmi 'Nada'. | Author, Hoard VI. | |
| 37, 38. | Similar to 29-36 | .. | British Museum, ex
Grant, 1923. |
| 39-41. | Similar to 29-36 | .. | British Museum ex
Hay, 1860. |
| 42. | Do. | .. | British Museum
(India Office
Collection). |

Part II *Pr*

VARO SHAHI.

Type I. *Æ* Drachm.

Obv. :—Bust of ruler, facing, diademed, ends of diadem floating upwards from shoulders; wearing crown with three foliate ornaments, the centre one having three plumes, the flanker two each; between these ornaments, crescents, crown adorned with floating fillets and smooth globe; bushy hair on either side of neck, no beard; wears ear-rings and necklace; bust ends in four lobes; grenetis. Brahmi legend :—(10 o'clock) 'Varo'.

(2 o'clock) 'Shāhi'.

Rev. :—Fire-altar with double base and triple capital, fillet adorning shaft, surmounted by flames with triangular flanking ornaments; on either side, attendant, facing altar, holds sword at carry, grenetis.

43. (Plate 4) .. British Museum, ex
Whitehead, 1922.

Type I (a).

As on Type I but sole legend 'Varo'.

44. (Plate 4) British Museum, ex
Cunningham, 1894
published Num.
Chron. 1893, Plate
XV 7.

45. .. British Museum, ex
Cunningham, 1894.

46. .. British Museum, ex
Brereton, 1859.

PIROCH.

Type I. Æ Drachm.

Obv. :—Bust of ruler, facing, diademed, ends of diadem floating upwards from shoulders; wearing crown with three foliate ornaments each of three plumes; crown adorned with fluted globe surmounting crescent; bushy hair on either side of neck; clean shaven; wears ear-rings, necklace and jewelled collar; bust ends in four lobes; grenetis.

No legend.

Rev. :—Fire-altar with double base and triple capital, fillet adorning shaft; surmounted by flames; on left, attendant, facing altar, holding sword at the carry; on right, ornamental globe resting on symbol like Buddhist triratna, surmounted by flat platform from which palm branches arise; grenetis.

In exergue, Pehlevi legend 'Pirōch'.

47. (Plate 4) .. Author, Hoard III.
48. .. British Museum, ex
Cunningham, 1894,
published Num.
Chron. 1893,
Plate XV 5.

Type I (a). As on Type I but central foliate ornament on crown omitted.

- 49, 50. (49 Plate 4) .. Author, Hoard III.

BUDDHABALA.

Type I. Æ Drachm.

Obv. :—Bust of ruler, facing, diademed, ends of diadem float upwards from shoulders; wearing crown with two outspread wings and central foliate ornament of three plumes; crown adorned with floating fillets and fluted globe surmounting crescent; bushy hair on either side of neck, small moustache, clean shaven chin; wears ear-ring and necklace; bust ends in four lobes; grenetis.

No legend.

Rev. :—Fire-altar with double base and triple capital, fillet adorning shaft; surmounted by flames; on either side attendant facing altar with sword at the carry; grenetis. In exergue, Brahmi legend :—'Buddhabala'.

- | | | |
|---------------|----|--|
| 51. (Plate 4) | .. | Author, Hoard IV. |
| 52. (Plate 4) | .. | Author, Hoard III. |
| 53. | .. | British Museum,
Parkes Weber Gift,
1906. |

ANONYMOUS.

Type I. Æ Drachm.

Obv. :—Bust of ruler, facing, diademed, ends of diadem float upwards from shoulders, wearing crown with central crenellated ornament surmounted by jewelled dome and flanking foliate ornaments of two plumes; bushy hair on either side of neck, clean shaven; wears ear-ring and necklace; bust ends in four lobes; grenetis.

No legend.

Rev. :—Fire-altar with double base and triple capital, fillet adorning shaft; surmounted by flames in which bust of Hormizd appears to right; on either side, attendant, facing altar, with sword at the carry; grenetis.

No legend.

- | | | |
|---------------|----|---|
| 54. (Plate 5) | .. | .. British Museum, ex Whitehead,
1922. |
|---------------|----|---|

BHĀSA.

Type I. Æ Drachm.

Obv. :—Bust of ruler right, diademed, ends of diadem float upwards from shoulders; wear flat cap with vertical flutings, surmounted by crescent and globe; bushy hair on either side of neck, clean shaven; wears ear-ring and necklace; bust ends in four lobes; large crescent behind shoulders; grenetis. Brahmi legend (2 o'clock) 'Bhāsa'.

Rev. :—Fire-altar with double base and triple capital fillet adorning shaft; surmounted by flames in which bust of Hormizd appears to right; on either side, attendant facing altar with sword at the carry; grenetis.

- | | | |
|---------------|----|--|
| 55. (Plate 5) | .. | .. British Museum, ex Cunningham,
1894. Published Num.
Chron. 1893, Pl. XV, 6. |
|---------------|----|--|

UNIDENTIFIED SATRAP OF ARDESHĪR II.

Type I. Æ Drachm.

Obv. : Bust of ruler right, diademed, ends of diadem floating upwards behind head; wears close-fitting cap surmounted in front with jewelled globe adorned with fillets; bushy hair behind neck, clean shaven; wears ear-ring, necklace and jewelled collar; grenetis.

Illegible Pehlvi legend.

Rev. : Fire-altar with double base and triple capital, fillet adorning shaft, surmounted by flames in which bust of Hormizd appears to right; on either side, attendant faces altar with sword at the carry; grenetis.

In exergue illegible Brahmi legend.

56. (Plate 5) British Museum, ex Whitehead.
1922.

TARIKA.

Type I. Æ Round.

Obv. :—Bust of ruler, facing, diademed, ends of diadem floating upwards from shoulders ; wear head-dress surmounted by crescent ; clean shaven ; wears ear-ring and necklace ; bust ends in four lobes ; grenetis.

Rev. :—Brahmi legend in two lines :—‘ Kshatrapa Tarika ’, grenetis.

57. .. British Museum, ex Cunningham.
1894, published Num. Chron.
1893, Plate XV provenance
Bannu.
58. (Plate 5) British Museum, ex Talbot, 1903.
59, 60 (59 Plate 5) Author, provenance Akra, Bannu
District.
61. .. Electrotpe in British Museum,
published Rapson (*J.R.A.S.*,
1903) ‘ Notes on Indian Coins
Seals ’, Plate V, 11.

Note :—No. 61 being double struck the inscription is not legible.
The coin may have been struck by another ruler, though
it appears to me to be of Tarika.

Type II. Æ Round.

Obv. :—Head to left, details indistinct.

Rev. :—As on type I.

62. .. British Museum, ex Cunningham.
1894, published Num. Chron.
1893, Plate XV, 9, provenance
Bannu.
- 63, 64. .. Author, provenance Akra, Bannu
District.

Type III. Æ Round.

Obv. : Head to right, details indistinct.

Rev. : Apparently as type I.

- 65, 66. .. British Museum, ex Cunningham,
1894.

SADHANI.

Type I. Æ Drachm.

Obv. :—Bust of king to right, diademed, ends of diadem floating upwards behind head ; wears ornamental flat-topped crown as shown in the coins of Shapur III ; crown adorned with floating fillets and pearly globe ; bushy hair, no beard, wears earring and necklace ; bust ends in four lobes ; grenetis.

Before face, vertical Brahmi legend ‘ Sadhani ’.

Behind head, Brahmi ‘ Pra ’.

Rev. :—Fire-altar with single base and triple capital, fillet adorning shaft ; surmounted by flames in which bust of Hormizd appears to right ; on either side attendant, facing altar with sword at the carry ; grenetis.

- | | | | |
|---------------|-----|----|---|
| 67. (Plate 5) | ... | .. | British Museum, ex Rogers, 1894. |
| 68, 69. | .. | .. | British Museum, ex Cunningham.
1894. |

UNIDENTIFIED SATRAP 'A' OF SHAPUR III.

Type I. Drachm.

Obv. :—Bust of king to right diademed as on coins 67–69, though ornaments on flat topped crown varied and reminiscent of coin 55.

Before face, unread Greek-Kushan legend.

Rev. :—Fire altar with double base and triple capital, fillet adorning shaft; surmounted by flames in which bust of Hormizd appears to left; on either side attendant, facing altar with sword at the carry; grenetis.

- | | | | | |
|---------------|----|----|----|-------------------|
| 70. (Plate 5) | .. | .. | .. | Author, Hoard IV. |
|---------------|----|----|----|-------------------|

UNIDENTIFIED SATRAP 'B' OF SHAPUR III.

Type I. Drachm.

Obv. :—Bust of ruler to right, diademed, ends of diadem floating upwards behind head, wearing flat-topped crown as shown on the coins of Shapur III; crown adorned with globe and floating fillets; bushy hair, beard appears to pass through ring; wears necklace; bust ends in four lobes: grenetis.

Before face, unread Pehlevi legend.

Rev. :—Bust of ruler (?) to left, diademed; wears pearled coronet; fillet tied into hair at top of head; bearded; bust ends in four lobes, grenetis.

Before face, unread Pehlevi legend.

- | | | | | |
|-----|----|----|----|--------------------------------------|
| 71. | .. | .. | .. | British Museum, ex Cunningham, 1894. |
|-----|----|----|----|--------------------------------------|

APPENDIX II.

A Stylistic Comparison of the Coins of the Little Kushan Rulers and Satraps.

This comparison has been relegated to an Appendix as a discussion of it would interrupt the argument in the main paper unnecessarily. It has also been reduced to tabular form for clearness.

The first table shows the differentiae which appear worthy of note. The second compares the various coins with respect to these differentiae.

TABLE I.

Reference	Feature	DIFFERENTIAE		
		a.	b.	c.
A.	Flan of coin.	Æ Thin, spread fabric.	Æ Smaller, thicker flan.	Æ .65"
B.	Direction in which bust faces.	To front ..	To right ..	To left.
C.	Chin of portrait.	Clean shaven.	Bearded, end of beard passed through ring.	....
D.	Emblems surmounting head dress.	Crescent and globe.	Globe alone.	Neither.
E.	Fillets on head-dress.	Present ..	Absent	....
F.	Ornamentation on bust.	Shoulders draped with palmettes.	Bust ends in four lobes representing shoulders and chest.	....
G.	Obverse legend.	Name and Title.	Name only	....
H.	Script of obverse legend.	Brahmi ..	Pehlevi ..	Greek-Kushan.
J.	Reverse legend.	Primary ..	Secondary	....
K.	Script of reverse legend.	Brahmi ..	Pehlevi ..	Greek-Kushan.
L.	Flames on fire-altar.	Bust of Hormizd among flames.	No bust among flames.	Triangular ornament flanking fire.
M.	Fire-altar ..	Triple base and capital.	Double base, triple capital.	Single base, triple capital.

APPENDIX II.---(Contd.)

TABLE II.

Dynasty.	King and Type.	Reference to Catalogue.	Features differentiated. (See Table I.)										
			A.	B.	C.	D.	E.	F.	G.	H.	J.	K.	L.	M.
<i>Little Kushan Rulers</i> Independent Period	Kidara Type I	1-3	a.	b.	a.	a.	a.	b.	a.	a.	b.	a.	a.
	Kidara Type II	4-14	a.	a.	a.	b.	a.	a.	a.	a.	b.	a.	a.
	Piro Type I	15-21	a.	b.	b.	b.	a.	a.	a.	a.	b.	a.	a.
	Piro Type II	22-25	a.	b.	b.	b.	a.	a.	a.	b.	b.	a.	a.
	Varahrân	26-42	a.	b.	b.	b.	a.	a.	{ a. } { b. }	b.	{ b. } { c. }	{ a. } { Nil. }	b.	a.
<i>Little Kushan Satraps</i> In independent period	Varo Shahi	43-46	a.	a.	a.	b.	a.	b.	a.	b.	c.	Nil.	c.
	Piroch	47-50	a.	a.	a.	a.	b.	b.	Nil.	Nil.	a.	b.	b.
	Buddhabala	51-53	a.	a.	a.	a.	b.	b.	Nil.	Nil.	a.	b.	b.
	Anonymous	54	a.	a.	a.	c.	b.	b.	Nil.	Nil.	c.	Nil.	a.
	Bhasa	55	a.	a.	a.	a.	b.	b.	b.	b.	a.	c.	b.
	Tarika Type I*	57-61	c.	a.	a.	e.	b.	E.	Nil.	Nil.	a.	a.	Nil.
<i>Satraps under Sasanian Rulers.</i>	Unidentified under Ardeshir II.	56	a.	b.	a.	b.	a.	b.	a.	b.	b.	a.	a.
	Sadhami under Shapur III	67-69	b.	b.	a.	b.	a.	b.	b.	b.	c.	Nil.	a.
	Unidentified 'A' under Shapur III.	70	a.	b.	a.	b.	a.	b.	Not Clear	c.	c.	Nil.	a.
	Unidentified 'B' under Shapur III.	71	b.	b.	b.?	b.	a.	b.	Not Clear	b.	b.	b.	Nil.

* Tarika Types II and III are too poorly preserved for a detailed analysis.

APPENDIX III.

Notes on Finds and Findspots of Little Kushan Silver and Copper Coins.

All finds known to the author are listed below. All other coins of the dynasty which he has traced are also listed grouped according to the collections in which they appear. The table shows the composition of each find or group in detail.

List of finds, etc.

- I.—Excavated by the Archaeological Survey of India at Taxila, *vide* A.S.R. 1915-16, page 36, item 5.
 II.—Excavated by the Archaeological Survey of India at Jaimal Garhi, *vide* A.S.R. Frontier Circle 1920-21, p. 3 and Appendix V item 140, 263 and 264. A Sasanian coin of Varahrān IV was found in same block of buildings but not in conjunction with these coins.
 III.—Exact provenance not known—purchased by author in Rawalpindi from a petty coin dealer whose other coins all appeared to be of local provenance.
 IV.—Exact provenance unknown—purchased by author in Peshawar City.
 V.—Purchased by author in Peshawar. The vendor stated he bought them from a cultivator who dug them up in Swabi Tehsil, Peshawar District. He could give me no further information.
 VI.—Exact provenance unknown—purchased by author from a dealer in Rawalpindi.
 VII.—In British Museum ex Major Hay, 1860, provenance unrecorded.
 VIII.—do. ex W. L. Grant, 1923 do.
 IX.—do. ex Col. H.E. Deane 1919 do.
 X.—do. ex India Office Collection do.
 XI.—In the Indian Museum, Calcutta, Catalogue, Vol. I, Pl. XXIV, 8 do.
 XII.—In the British Museum ex R. B. Whitehead, 1922. do.
 XIII.—do. ex General Cunningham, 1894. do.
 XIV.—do. Parkes Weber Gift, 1906 do.
 XV.—do. ex W. S. Talbot, 1903 do.
 XVI.—do. ex C. J. Rogers, 1894 do.
 XVII.—do. ex Brereton, 1859 do.
 XVIII.—Electrotype in British Museum. Provenance and ownership of original unrecorded.
 XIX.—Found by author at Akra, Bannu Dist.
 XX.—In the British Museum ex General Cunningham, 1894 provenance Bannu District.

Notes.

To save space finds IX, X and XI have been omitted from the table showing the composition of the various finds. Each contained 1 coin of the independent ruler Varahrān of the type of numbers 26 to 42.

Certain finds contained Sasanian drachms as noted below :—

- V 2 of Varahrān IV
 VI 1 of Shapur III
 and 1 of Varahrān IV.

APPENDIX III—(Contd.) TABLE II.

Dynasty.	King and Type.	Refer- ence to Cata- logue.	COMPOSITION OF FINDS.																	
			I.	II.	III.	IV.	V.	VI.	VII.	VIII.	XII.	XIII.	XIV.	XV.	XVI.	XVII.	XVIII.	XIX.	XX.	
<i>Little Kushan Rulers.</i> Independent period.	Kidara Type I	1-3	..	..	1	1	..	..	..	..	..	..	..	..	..	..	1	..	..
	{ Kidara Type II	4-14	1	5	2	..	3	..	..	..	..	3	..	..	..	..	..	..	..
	{ Piro Type I ..	15-21	..	..	1	1	1	2	..	..	..	..	..	..	..	..	..	..	..
	{ Piro Type II ..	22-25	..	..	..	1	1	3	2	..	..	..	..	..	..	..	..	..	..
	Varahrān	26-42	..	..	..	..	4	5	..	..	..	..	..	..	..	..	..	..	..
<i>Little Kushan Satraps.</i> In indepen- dent period.	Varo Shahi ..	43-46	..	..	..	..	..	..	..	..	1	2	..	..	..	1	..	..	..
	Piroch ..	47-50	..	..	3	..	..	..	..	..	..	1	..	..	..	..	..	..	..
	Buddhabala ..	51-53	..	..	1	1	..	..	..	..	1	..	1	..	..	..	..	..	..
	Anonymous ..	54	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Bhasa ..	55	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..
	Tarika Type I ..	57-61	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	2	1
	Tarika Type II ..	62-64	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	1
	Tarika Type III	65-66	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
<i>Satrapas under Sasanian Rulers.</i>	Unidentified under Ardeshir II.	56	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..
	Sadhani under Shapur III.	67-69	..	..	..	..	..	..	..	..	..	2	..	..	1	..	..	..	..
	Unidentified 'A' under Shapur III	70	1	
	Unidentified 'B' under Shapur III.	71	1	

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M. F. C. MARTIN.



1 AR



2 AR



4 AR



5 AR



15 AR



16 AR



18 AR



COINS OF THE LITTLE KUSHĀNS.



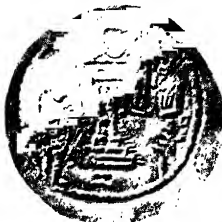
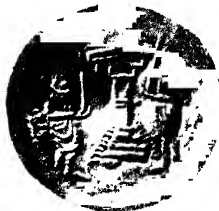
19A



20A



21A



22A



23A



26A



29A





30 AR



31 AR



32 AR



33 AR



34 AR



35 AR



36 AR



COINS OF THE LITTLE KUSHĀNS.



43 AR



44 AR



47 AR



49 AR



51 AR



52 AR



COINS OF THE LITTLE KUSHĀNS.



54R



55R



56A



58
Æ



59
Æ



67R



70R



71R



COINS OF THE LITTLE KUSHĀNS.

343. OBSERVATIONS ON DIFFERENT TYPES OF SILVER PUNCH-MARKED COINS, THEIR PERIODS AND LOCALE.

My first paper on 'The Classification and significance of symbols on the silver punch-marked coins', published in the Numismatic Supplement No. XLV for 1934, and in the *Journal and Proceedings of the Asiatic Society of Bengal*, Vol. XXX, No. 3, 1934, was more or less descriptive. Here I intend to discuss in detail other points.

Since the discovery of Dr. Spooner, and my own finding that the bigger symbols seen on the obverse side of the coins indicate a methodical grouping of symbols, it has become easier now to differentiate and classify them, and find out the coins of the same class bearing the same symbol-groups, which were undoubtedly minted in the same period, as most of them are punched with the same dies. In a group of coins punched with the same group of symbols in a hoard, all the different shapes, such as round, elliptical, rectangular, and square with clipped corners are found as illustrated on Pls. IX to XXI, of my paper published in the Numismatic Supplement No. XLV. The rectangular or round shape is thus no criterion of the chronological period of punch-marked coins, as supposed by some scholars.

Even the coins of the earlier periods as illustrated on Pls. VI and VIII, are found in all the four shapes, although most of the earlier types of coins which are illustrated on Pls. I, II, III and XXXI, in the N.S. No. XLV, and described hereafter, are irregularly round in shape. This latter fact most probably led Cunningham to say that 'the earlier coins are generally thin and broad, of irregular shapes, some are oblong and some are nearly round'¹. Numismatists who have handled a sufficient number of silver punch-marked coins would vouchsafe the correctness of this. The coins of earlier periods are broader and thinner, of irregular shape with rounded corners, of a different standard of weight and impressed with a group of only four crudely designed symbols, and rarely of five. The shape of coins was apparently no matter of consideration, in the very early days of coinage; only the weights and symbols were cared for chiefly.

The silver punch-marked coins of comparatively later periods are more geometrical in shapes, being circular, elliptical, oblong, and square, with clear corners, clipped or unclipped, thicker and smaller. They always bear groups of five symbols, showing finer and geometrically correct delineation, and conforming to the thirty-two *Rattis* standard weight. This is

¹ C.C.A.I., p. 43.

my conclusion from a study of over eight thousand silver punch-marked coins, from my own and other private collections, and from eight different hoards now lying unpublished, and unclassified in the three well known Museums of India.

Another theory that the silver punch-marked coins with blank reverse, or marked with only one or two very small symbols on their reverse, are of earlier period, as compared with those showing three or more symbols. In other words coins punched on their reverse sides with many minute symbols say from three to nine or fourteen are considered to belong to a later date.

This is another incorrect theory still prevailing amongst the scholars ; but after the discovery of the fact that the bigger symbols seen on the obverse side of the coins indicate a methodical grouping, the first three of which are common, and the variation of the other two constitutes a series of that particular group, as will be evident from the symbol-groups illustrated on Plates IX to XXI, and also on Pls. I, II, III, IV, V and VI, N.S. No. XLV,¹ which illustrate the groups seen on the coins of the earlier types, in which only the first two are common, the remaining are changed to form their series ; this has enabled us now to recognise the coins of the same class which bear the same symbol-groups out of any hoard of coins, and it will be found that some of these similar coins have blank reverse, sometimes showing anvil marks, while others of the same class will show one, two, three or more up to nine small symbols on their reverse.

Coins bearing the same symbol-groups are undoubtedly of the same period and were minted under the same authority or king. The plausible explanation as to why some coins of the same class have blank reverse, and others are marked with a large number of symbols is, that some of the coins of the same class which remained in circulation for a longer time, say for a century or more, bear more marks than those which somehow or other were kept confined and could not come into full circulation and thus escaped being marked many times like the others, till they all reached the hand who last hoarded them. The explanation is further supported by the fact that coins of the same class from the same hoard bearing a large number of symbols on the reverse look much worn, and are lighter in weight comparatively, than those of the same class which are of blank reverse or bear only one or two small symbols. I have found many such instances in several hoards, and I think it is wrong to say that coins bearing none or one symbol on the reverse are of earlier period. One or two instances would not be out of

¹ This supplementary or the second part of the article should be read with the help of the previous one published in the Numismatic Supplement No. XLV for 1934, or the *Journal and Proceedings of the Asiatic Society of Bengal*, Vol. XXX, 1934.

place here. For example there are several coins of Nos. 54 and 57 in my cabinet as illustrated on Pl. XIV (N.S. No. XLV) ; one of No. 54 has a single mark, while another bears 7 symbols on the reverse ; similarly coins No. 57 have from 1 to 8 marks, and in both the cases the coins bearing a larger number of marks not only look much worn, but actually weigh a little less, the weight of coin No. 54 bearing one symbol is 3185 mgs, the other having 7 marks weighs 2995 mgs, a difference of 190 mgs, or about 3 grains ; No. 57 with one mark weighs 3190 mgs, but that which has 8 symbols on the reverse weighs only 2994, and the difference of weights being 196 mgs, or 3.1 grs, although these coins bear the same symbol-group and were obtained from one hoard. I may take another instance from the earlier type of coins illustrated on Pl. XXXI, which were obtained from Mathura fresh from a hoard. These 25 coins are all of one class, bearing the same 4 big symbols on their obverse sides deeply punched, but the reverse symbols varied from one to twelve in number ; coin No. 1 which is punched with 12 figures on the reverse weighs 2830 mgs, and looks worn, but coin No. 19 which is marked with only three smaller symbols on the reverse weighs 3017 mgs, being heavier by 187 mgs, or 2.9 grains. This clearly indicates that the coin which was in free circulation for a longer time after being minted has been much worn, and bears more marks of the coin testing-officer or guilders as described in the next paragraph, and most probably the one which bears one or three marks remained somehow or other confined, and did not come into circulation as much as the other one, before reaching the hoard from which they were obtained now, and hence it does not bear more marks. But all of them belong to the same period ; as they bear the same symbols, it may be that one was coined a few days or months earlier than the other, and to say that coins having the same group of symbols with blank reverse or bearing one or two symbols are of earlier period than those punched with more on the reverse is misleading.

THE REVERSE SYMBOLS.—Minute symbols punched lightly on the reverse have been counted from one to fourteen. They can be divided into two distinct classes :—(1) Minute symbols which are exactly similar to the symbols seen on the obverse side with the groups. (Compare the symbols in the 3rd and 4th columns of Plates XVII to XXI, in the N.S. No. XLV.) They are generally punched singly or with one or two other small symbols, and are commonly found on the reverse of coins of the later or Mauryan period, described later on, as well as on the pre-Mauryan coins, as illustrated on Plate 6 of this article.¹

¹ Symbols seen on the obverse of the coins are marked with capital letters, but the smaller symbols which are found on the reverse of the coins are marked with the same small letters on the plate for reference.

(2) Reverse symbols which are not seen amongst the obverse groups of symbols : These have been punched with two to nine symbols on the reverse (compare the figures in the 3rd and 4th columns of Plates IX to XVII, coins No. 1 to 92 (N. S. No. XLV). What can be the explanation for such small reverse symbols ? Do the smaller symbols which exactly resemble some of the conspicuous symbols on the obverse groups carry any special significance ? These are the questions which confront us, and require explanation. Various theories of the punching on the reverse side of the coins have been put forward by previous scholars. Some thought that they are the marks punched by the ancient guilders, others explained them partly to be Mint-marks, and partly marks of the guilders. No doubt the idea of a Mint-mark came from the study of Indo-Greek coins of the 2nd and 1st century B.C. Whether the early Indians knew and put the Mint-marks on the punch-marked coins is a question that has not yet been definitely settled.

Sir Alexander Cunningham in his 'Coins of Ancient India' has described a gold coin¹ excavated from Taxila, bearing on one side the figure of a standing bull facing to left, which he wrongly thought to be a lion, and a figure resembling the Vajra formed by two crescents put on the two sides of a dot and two arrow-heads one above and the other below, on the other side of the coin²; a somewhat similar symbol was seen on the reverse side of some silver punch-marked coins obtained from the same place, illustrated as Figs. 1 and 2 on Pl. II, in his C.A.I. This led Cunningham to think that it may be the mark of Taxila,³ but he was not definite about calling it a mint-mark ; besides no other instance of the kind was known to him. On the other hand, it is well known that a particular symbol⁴ which is first seen on the gold and copper coins of Kadphises II, was then followed by all the great Kushans on their copper and gold issues, even retained by the later Kushans on their coins with a little modification, and after them adopted by the great Guptas with further modifications probably as a royal mark on their gold Dinárs and Suvarnas. Some scholars have taken the symbol to be a 'mint-mark', Vincent Smith has, however, correctly called it 'Monogrammatic Mark'. The idea that some of the small reverse symbols on the punch-marked coins are mint-marks thus remains unsupported, but the theory that they are all guilder's marks is also not fully satisfactory.

SOME OF THE CONSPICUOUS REVERSE SYMBOLS ARE COIN-TEST-MARKS OF THE EARLY PERIOD :—The study of 1,351 silver punch-marked coins known as the Lotapur hoard of Unao

¹ C.C.A.I., Pl. II, No. 18.

² See Fig. 3, Pl. 6, of this article.

³ C.C.A.I., p. 61.

⁴ See Fig. 4, Pl. 6, of this article

District, all of the type illustrated on Plate VIII, (N.S., No. XLV), which were sent to me for classification, by the Coin Committee of the Lucknow Museum, brought to light new facts. This led me to think that most of the reverse symbols which are conspicuously seen on the back of a large number of coins in a hoard are the test-marks put after testing the coins by the authority of that period, viz. the Rūpadarśaka, as mentioned by Kautilya (2-12-30).

रूपदर्शकः पणयात्रां व्यवहारिकीं कोशप्रवेश्यां च स्थापयेत् . . . पारौचित्यमष्टभागिकं शतम्. The examiners of coins 'Rūpadarśaka' shall regulate currency both as a medium of exchange 'and as legal tender admissible into the treasury' One-eighth Panaper cent. be levied as 'Pārikshika' or coin testing charges. It is natural to think that the officer must be putting some test-mark on the coins like the modern Hall-mark on the sterling silver wares, for which he was paid.

In this Lotapur hoard of 1351 coins which are all Half-Purānas or Half-Panas of 32 *Ratti* standard weight, more than one third of the coins are of thinner and broader fabric, and generally of distorted shapes, and liable to break (see Coin No. 4 of Pl. VIII, (N.S. XLV). Some 15 broken pieces of these thin coins were also found in the lot. All these coins being of small size, were punched with a *single bold symbol* on one side, which should be designated as the obverse side, as many of the coins bearing the same symbols were found in the hoard, the other side was punched with smaller symbols, numbering from one to nine, without any methodical order of grouping.

The question arises whether all the smaller symbols on the reverse could be the marks of guilders. For instance one of the symbols is the figure of a Fish, which is conspicuous on 885 coins. How could that be the mark of a guilder? It cannot be explained why about two third of the coins in the hoard were marked by the same guilder, and though there were other less conspicuous marks on them along with the fish mark, at the same time it is true that some of the coins had *only* the single mark of the fish. No definite conclusion could thus be arrived at, but to my mind, the discovery of two peculiarly formed coins in the hoard, Nos. B7 and C43, now in the Lucknow museum ¹ was conclusive proof (see Figs. 1 and 2, Pl. 6, of this article). Each of the coins was formed of two separate pieces—a smaller silver piece being mounted on the original broken coin, which bore the obverse symbol, the whole process being done very ingeniously without soldering. On coin No. C45,² the smaller piece was mounted like a stone on a ring, with small claws cut on the margin of the original broken piece bearing one big symbol

¹ A note on them will be published soon, with illustrations.

² For the illustration of the coin see Fig. 2, Pl. 6, of this article.

on the obverse and bent over the upper smaller piece, the latter being marked by a Nandipada and a turtle. On coin No. B7,¹ the extra piece was mounted by turning over the edges of the lower original damaged coin on the four sides to hold the upper piece; a fish symbol occurring on the additional piece. Both the fish symbol and the Nandipada-turtle combination appear to be very popular being found on 64 and 60% of the coins of the present hoard. The most plausible explanation about the two coins is that separate pieces of silver were added to the original damaged coins to make up the loss of their weights, when they came to be tested. The coins were apparently not destroyed or withdrawn from circulation on account of their damaged condition, but mended under official orders and most probably the official marks of the Rūpadarsakas were put on them as a guarantee of their full weight, before they were re-circulated. Both the coins now weigh 26·6 and 25·45 grains respectively, which very nearly approaches the average weight of the coins of thinner type in the hoard, which was calculated to be 26·5 grains. This is a practical example showing how the coins were occasionally tested in the early days. Thomas, quoting Manu on this point,² mentions that weights and measures should be checked every six months, and probably the coins were included as they were determined by the weights.

It need not be pointed out here that the Rūpadarsaka was an officer in the service of the king, and not a guilders' man, as is clear from the Arthashāstra of Kautilya³. The issue of coin was an Imperial concern, under the officer Lakṣaṇādhyakṣa, the mint-master of those days, who was not only in charge of the supervision of coin minting department, but was also the officer who knew the Lakṣaṇas, the symbols punched on the coins. The very word Lakṣaṇādhyakṣa is indicative of the system of punching symbols on the coinage of the ancient period under a well organised department.

It becomes clear now that coins which remained in circulation for a considerable period and were checked again and again by different officers naturally show a large number of 'test-marks', in the shape of the small symbols on the reverse, sometimes as many as twelve or fourteen. These coins look much defaced and worn, becoming comparatively lighter in weight, and are sometimes found mixed with coins of later period specially with the Mauryan coins described in the next chapter, which had a wide circulation throughout the Mauryan Empire, from one end of the country to another end.

In conclusion it can be said, that most of the small reverse symbols which are conspicuously seen on a large number of coins

¹ For the illustration of the coin see Fig. 1, Pl. 6, of this article.

² Manu, Ch. VIII, 403, षट्सु षट्सु च मासेषु पुनरेव परीक्षयेत् ॥

³ 2-12-30—Kautilya's Arthshāstra.

in a hoard, are the 'test-marks' put by the Rûpadarsâka after testing the coins. Some of the marks may be due to the guilders, but it looks extraordinary that the guilders would have taken the trouble to mark every coin, when there was already an official system of testing and marking the coins. It may be also noted here that sometimes the small test-marks are by mistake punched on the obverse side, adding to the actual number of the 5 symbols of the group, but this does not interfere with the grouping arrangement, and with a little care can be made out distinctly from the regular group of 5 symbols on the obverse.

II. SOME COMMON SYMBOLS.

As stated before, some of the symbols which are conspicuously observed in the groups on the obverse of the coins, are also seen in a minute form, on the reverse of the coins of the same period, as well as on the *pieces of chronologically earlier period*, for which some plausible explanation should be found. All such symbols which are seen on both sides are illustrated for the sake of facility on Plate 6 of this article.¹ A few instances would help to clear the above statement.

Figure A, *Pl. 6 of this article*, which is conspicuously seen on all the coins from 1 to 12 on Pls. I, II and III,² as the first figure of the symbol-groups, on the obverse is also seen like Fig. a, on the reverse of coin No. 1, Pl. I (N.S. No. XLV).

Fig. B, *Pl. 6 of this art.*, the 3rd Figs. in the groups on coins Nos. 1 and 2, Pl. I (N.S. No. XIV) appears as Fig. b, *Pl. 6 of this art.*, on the reverse of coin No. 3, Pl. I; and No. 5, Pl. II (N.S. No. XLV).

Fig. C, *Pl. 6 of this art.*, the 3rd figures in the groups of symbols on coins 3, 4, and 5. Pls. I and II (N.S. No. XLV) is also punched as Fig. c, *Pl. 6 of this art.* on the reverse of coin No. 10 as the 5th figure, Pl. III (N.S. No. XLV).

Fig. D, *Pl. 6 of this art.*, the 4th Fig. on coin No. 10, Pl. III (N.S. No. XLV) is seen like Fig. d of *Pl. 6 of this art.* on the reverse of coin No. 6, Pl. II, and also with its face to right on coins 11 and 12, on Pl. III (N.S. No. XLV).

Fig. E, *Pl. 6 of this art.*, seen on the Golakhapur early coins of Magadha, which is the 1st Figure of the groups on all the coins from 4 to 105, on Pls. IV and V (N.S. No. XLV) appears

¹ The capital letters refer to the figures of the obverse side, and the small letters to the symbols of the reverse side on Pl. 6 of this article.

² All such references to plates are meant for the plates illustrated in the Numismatic Supplement, No. XLV or the *Journal and Proceedings of the Asiatic Society of Bengal*, Vol. XXX, 1934, unless stated otherwise.

as Fig. e, *Pl. 6 of this art.* on the reverse of coins Nos. 75 and 96, illustrated in the 5th column, Pl. V (N.S. No. XLV).

Fig. F, *Pl. 6 of this art.*, the fourth figures in the groups on coins 4 to 59, Pl. IV (N.S. No. XLV) is impressed like Fig. f, *Pl. 6 of this art.* on the reverse of the coin No. 105 (N.S. No. XLV).

Fig. G, *Pl. 6 of this art.*, the third figures of the groups on coins Nos. 101 and 102 on Pl. V (N.S. No. XLV) is seen as the reverse symbol like Fig. g, *Pl. 6 of this art.*, on coins Nos. 86 and 103, Pl. IV (N.S. No. XLV).

Fig. H, *Pl. 6 of this art.*, the 5th figures of groups on coins Nos. 43 and 101, Pl. IV, V (N.S. No. XLV) is also punched as Fig. h, *Pl. 6 of this art.*, on the reverse of the coins Nos. 19, 20, and 213, Pl. IV (N.S. No. XLV).

Fig. I, *Pl. 6 of this art.*, the 4th figure of the group on coin No. 102, Pl. V (N.S. No. XLV) is seen as Fig. i, *Pl. 6 of this art.* on the reverse of coins Nos. 4 and 87, Pls. IV and V (N.S. No. XLV).

Fig. J, *Pl. 6 of this art.*, the 4th figure on coin No. 4 of Pl. VI (N.S. No. XLV) illustrating a third type of coins, is seen as Fig. j, *Pl. 6 of this art.*, on the reverse of coins Nos. 2, 3, 4, and 5, with and without dots on Pl. VI (N.S. No. XLV).

Fig. K, *Pl. 6 of this art.*, the 3rd figures of groups on coins Nos. 1 to 5, Pl. VI (N.S. No. XLV) facing both ways, is punched as Fig. k, *Pl. 6 of this art.*, on the reverse of coin No. 4, Pl. VI, as a small figure. (N.S. No. XLV).

On the other two types of coins illustrated on Plates IX to XXI, the following symbols are noteworthy :—

Fig. L, *Pl. 6 of this art.*, seen as the obverse symbols in the groups on a good many coins, $\frac{\text{No. 2 Nos. 25 and 28}}{\text{Pl. IX}}$, $\frac{\text{No. 55}}{\text{Pl. XIV}}$, $\frac{\text{Nos. 76 to 80}}{\text{Pl. XVI}}$, $\frac{\text{No. 90}}{\text{Pl. XVII}}$, $\frac{\text{No. 93}}{\text{Pl. XVII}}$, $\frac{\text{No. 118}}{\text{Pl. XIX}}$ and $\frac{\text{No. 141}}{\text{Pl. XXI}}$, appears as a reverse symbol on coins $\frac{\text{Nos. 24 and 28}}{\text{Pl. XI}}$, $\frac{\text{Nos. 33 and 37}}{\text{Pl. XII}}$, $\frac{\text{No. 72}}{\text{Pl. XV}}$, $\frac{\text{Nos. 76 and 77}}{\text{Pl. XVI}}$, $\frac{\text{Nos. 87 and 88}}{\text{Pl. XVII}}$, $\frac{\text{Nos. 108, 117 and 118}}{\text{Pl. XIX}}$ and $\frac{\text{No. 120}}{\text{Pl. XX}}$, (N.S. No. XLV).

Fig. M, *Pl. 6 of this art.*, notably seen as a group symbol on coins $\frac{\text{Nos. 7 and 10}}{\text{Pl. IX}}$, $\frac{\text{Nos. 13, 17A, 19 and 20}}{\text{Pl. X}}$, $\frac{\text{No. 32}}{\text{Pl. XII}}$, $\frac{\text{Nos. 43, 49 and 50}}{\text{Pl. XIII}}$, $\frac{\text{No. 64}}{\text{Pl. XV}}$, $\frac{\text{No. 112}}{\text{Pl. XIX}}$ and $\frac{\text{No. 152}}{\text{Pl. XXXII}}$, appears

in a smaller form punched on the reverse of coins $\frac{\text{No. 7}}{\text{Pl. IX}}$,
 $\frac{\text{No. 39}}{\text{Pl. XII}}$, $\frac{\text{No. 51}}{\text{Pl. XIII}}$, $\frac{\text{No. 70}}{\text{Pl. XV}}$, $\frac{\text{Nos. 86 and 92}}{\text{Pl. XVII}}$ and $\frac{\text{No. 141}}{\text{Pl. XXI}}$
 (N.S. No. XLV).

Fig. N. *Pl. 6 of this art.*, the obverse symbol on coin $\frac{\text{No. 71}}{\text{Pl. XV}}$ is punched on the reverse of coins $\frac{\text{No. 42}}{\text{Pl. XIII}}$, $\frac{\text{No. 68}}{\text{Pl. XV}}$,
 $\frac{\text{No. 80}}{\text{Pl. XVI}}$ and $\frac{\text{No. 114}}{\text{Pl. XIX}}$ (N.S. No. XLV).

Fig. O. *Pl. 6 of this art.*, seen on the obverse of coins $\frac{\text{No. 8}}{\text{Pl. IX}}$, $\frac{\text{No. 16}}{\text{Pl. X}}$, $\frac{\text{Nos. 33 and 36}}{\text{Pl. XII}}$ is seen on the reverse of coins
 $\frac{\text{No. 32}}{\text{Pl. XII}}$, $\frac{\text{Nos. 54, 57 and 61}}{\text{Pl. XIV}}$, $\frac{\text{Nos. 68 and 70}}{\text{Pl. XV}}$, $\frac{\text{No. 75}}{\text{Pl. XVI}}$ and
 $\frac{\text{No. 92}}{\text{Pl. XVII}}$ (N.S. No. XLV).

Fig. P. *Pl. 6 of this art.*, another conspicuous figure on the obverse of coins $\frac{\text{No. 23}}{\text{Pl. XI}}$, $\frac{\text{Nos. 40 and 41}}{\text{Pl. XII}}$, $\frac{\text{No. 42}}{\text{Pl. XIII}}$,
 $\frac{\text{No. 83}}{\text{Pl. XVI}}$, $\frac{\text{No. 89}}{\text{Pl. XVII}}$, $\frac{\text{Nos. 113 to 115}}{\text{Pl. XIX}}$, and $\frac{\text{Nos. 121 to 124}}{\text{Pl. XX}}$, is
 also seen on the reverse of coins $\frac{\text{No. 41}}{\text{Pl. XII}}$, $\frac{\text{No. 58}}{\text{Pl. XIV}}$, $\frac{\text{No. 92}}{\text{Pl. XVII}}$,
 $\frac{\text{No. 113}}{\text{Pl. XIX}}$ and $\frac{\text{No. 132A}}{\text{Pl. XXI}}$ (N.S. No. XLV).

Fig. Q. *Pl. 6 of this art.*, a peculiar symbol seen on the obverse of coin $\frac{\text{No. 114}}{\text{Pl. XIX}}$ is found impressed on the reverse of
 coins $\frac{\text{No. 41}}{\text{Pl. XII}}$, $\frac{\text{No. 92}}{\text{Pl. XVII}}$ and $\frac{\text{Nos. 111, 113, 114 and 115}}{\text{Pl. XIX}}$ (N.S.
 No. XLV).

Fig. R. *Pl. 6 of this art.*, so conspicuously seen on the obverse of a large number of coins $\frac{\text{Nos. 3 to 6}}{\text{Pl. XI}}$, $\frac{\text{Nos. 12, 14, 17 and 18}}{\text{Pl. X}}$,
 $\frac{\text{Nos. 22, 29 and 30}}{\text{Pl. XI}}$, $\frac{\text{Nos. 34, 35 and 38}}{\text{Pl. XII}}$, $\frac{\text{Nos. 45 and 51}}{\text{Pl. XIII}}$, $\frac{\text{No. 54}}{\text{Pl. XVI}}$,
 $\frac{\text{No. 81}}{\text{Pl. XVI}}$, $\frac{\text{No. 87}}{\text{Pl. XVII}}$, $\frac{\text{No. 102}}{\text{Pl. XVIII}}$, $\frac{\text{No. 127}}{\text{Pl. XX}}$, is seen on the reverse
 of a few coins $\frac{\text{No. 54}}{\text{Pl. XIV}}$, $\frac{\text{Nos. 88 and 90}}{\text{Pl. XVII}}$ (N.S. No. XLV).

Fig. S. *Pl. 6 of this art.*, a prominent symbol seen on the obverse of later coins $\frac{\text{Nos. 105 to 107}}{\text{Pl. XVIII}}$ and $\frac{\text{No. 134}}{\text{Pl. XXI}}$,

is punched on the reverse of coins $\frac{\text{Nos. 72, 73 and 47}}{\text{Pl. XV}}$,
 $\frac{\text{Nos. 100, 101, 105 and 106}}{\text{Pl. XVIII}}$, $\frac{\text{No. 134}}{\text{Pl. XXI}}$ (N.S. No. XLV).

Fig. T. *Pl. 6 of this art.*, another conspicuous symbol seen on the obverse of two types of coins $\frac{\text{Nos. 70 to 74}}{\text{Pl. XV}}$,
 $\frac{\text{No. 75 and 75A}}{\text{Pl. XVI}}$, $\frac{\text{Nos. 93 to 96}}{\text{Pl. XVII}}$, $\frac{\text{Nos. 97 to 105}}{\text{Pl. XVIII}}$, $\frac{\text{Nos. 135 and 136}}{\text{Pl. XXI}}$
 and $\frac{\text{No. 149}}{\text{Pl. XXXII}}$ is found punched on the reverse of both the types
 of coins $\frac{\text{Nos. 70 to 74}}{\text{Pl. XV}}$, $\frac{\text{No. 95}}{\text{Pl. XVII}}$, $\frac{\text{Nos. 97 to 104}}{\text{Pl. XVIII}}$, $\frac{\text{Nos. 135 and 136}}{\text{Pl. XXI}}$
 and $\frac{\text{No. 149}}{\text{Pl. XXXII}}$ (N.S. No. XLV).

Fig. U. *Pl. 6 of this art.*, an early symbol seen on the obverse of coins $\frac{\text{Nos. 97, 98 and 99}}{\text{Pl. XVIII}}$, is seen on the reverse of
 $\frac{\text{Nos. 99 and 103}}{\text{Pl. XVIII}}$, $\frac{\text{Nos. 125, 127 and 128}}{\text{Pl. XX}}$, $\frac{\text{Nos. 135, 136 and 143}}{\text{Pl. XXI}}$
 and $\frac{\text{No. 149}}{\text{Pl. XXXII}}$.

Fig. V. *Pl. 6 of this art.*, one of the most common symbols, seen generally in the hoards as an obverse symbol on coins $\frac{\text{Nos. 93 to 96}}{\text{Pl. XVII}}$, $\frac{\text{Nos. 97 to 107}}{\text{Pl. XVIII}}$, $\frac{\text{Nos. 108 to 119}}{\text{Pl. XIX}}$,
 $\frac{\text{Nos. 120 to 131}}{\text{Pl. XX}}$, $\frac{\text{No. 143}}{\text{Pl. XXI}}$ and $\frac{\text{Nos. 148 and 149}}{\text{Pl. XXXII}}$, is seen punched
 of a minute size on the reverse of coins $\frac{\text{Nos. 5 and 8}}{\text{Pl. IX}}$,
 $\frac{\text{Nos. 22, 23 and 26}}{\text{Pl. XI}}$, $\frac{\text{Nos. 32, 34 and 35}}{\text{Pl. XII}}$, $\frac{\text{Nos. 44, 45, 46 and 51}}{\text{Pl. XIII}}$,
 $\frac{\text{Nos. 54, 56, 60, 62 and 63}}{\text{Pl. XIV}}$, $\frac{\text{No. 71}}{\text{Pl. XV}}$, $\frac{\text{No. 83}}{\text{Pl. XVI}}$, $\frac{\text{Nos. 87, 88, 92 and 96}^1}{\text{Pl. XVII}}$,
 $\frac{\text{No. 108}}{\text{Pl. XIX}}$, $\frac{\text{Nos. 123, 125 and 127}}{\text{Pl. XX}}$ and $\frac{\text{Nos. 137 and 140}}{\text{Pl. XXI}}$ (N.S.
 No. XLV).

This should not be taken as a complete list, there may be other symbols which will be seen punched on both the sides of other coins not included in the illustrated *corpus*; other classes


¹ Coins from Nos. 1 to 92 are chronologically earlier than Nos. 93 to 138 as explained hereafter.

of coins with different symbol-groups will be found punched on the reverse with symbols already described above.

We may now see whether there is any significance attached to particular symbols being punched on both sides of some coins.

Let us take for instance the last symbol described above, Fig. V, Pl. 6 of this Art. the simple form of 3 arches one placed over the other two with a base line and a crescent on top, which was described by previous scholars as the figure of a Chaitya of the Buddhists, to which it has no resemblance, but later it was described by Bhagawanlal Indrajī as the Meru Hill.

But some modern scholars count it as the representation of a hill with a crescent on its top. The symbol was first mentioned by me to be connected with the Mauryas, as I found it on half a dozen remains of definitely known Mauryan monuments, as well as on many cast copper coins dug out from the Mauryan levels at different ancient sites, as described below :—

(1) The hill-with-a-crescent symbol  is seen on the well

known Sohagaurā cast-copper-plate, one of the earliest known inscriptions, now in the Indian Museum, Calcutta. Several descriptions of it have been published by various scholars at different times, in the *Proceedings of the Asiatic Society of Bengal*, 1894, p. 44 ; in the *Indian Antiquary* of 1896 ; in the *Journal of Royal Asiatic Society* of 1907 ; in the *Journal of Behar and Orissa Research Society*, Vol. VI, p. 203, and in Vol. X, p. 189 ; with different interpretations, but all agreeing to assign it a place between the period of 320 and 300 B.C., i.e. in the pre-Asokan period. The latest description by Dr. K. P. Jayaswal published in the *Epigraphia Indica*, Vol. XXII, shows that it was a notice put on the thatched granaries specially built in the time of drought or famine, for the distribution of grain, etc. amongst the tenants. The plate bears the hill-with-a-crescent symbol, on the top of the lines as the central figure, (see *Fig. I, Pl. 7 of this article*), along with the other symbols, which are also found on silver-punched coins. This symbol (3-arched-hill-with-a-crescent) is conspicuous on a large number of silver punch marked coins, found from one end of the country to the other, including Afghanistan and Ceylon, which I had secured from 18 different places¹ situated far apart, and also occur in several large hoards now in the Patna and Lucknow Museums, which I date in the same period as the Sohagaurā Plate of 320 to 300 B.C. in the time of Chandragupta Maurya. This conclusion I pointed out in an article on 'the silver punch-marked coins and their age' published in a private booklet read before the Numismatic

¹ See notes in the 6th column opposite coin, No. 128, Pl. XX, Num. Suppl. No. XLV, and J.P.A.S.B., Vol. XXX, 1934.

Society's Meeting held at Delhi in 1931. The idea was further supported by the chemical quantitative analysis of the coin bearing the hill and moon symbol¹ which tallied very nearly with the ingredients of the silver coins described by Kautilya in his *Arthashastra*², and the prevalence throughout the country of that particular class of coin.³

(2) The same hill-and-moon symbol is also seen engraved on the base of the sand-stone polished pillar, excavated by Dr. Spooner⁴ in 1912 at a depth of about 15 feet at Kumrahar. (Patna), as illustrated on *Pl. 7, Fig. 2 of this article*. The monolith was found lying in an inclined position, without any capital, and without any inscription on it, as generally found on Asokan monoliths. In the words of Dr. Spooner 'The base itself is carefully smoothed but not polished, and bears a number of interesting symbols and Masons'-marks, amongst them a set of three rows of three circles each, is conspicuous, and also the symbol 8; I am unable to offer any explanation of this symbol which I believe has long been familiar in India. One point of interest in regard to it may, however, escape notice and that is that very similar marks occur on certain of the Achaemenian monuments of early date'. But he neither noticed nor described the figure of a *flag-staff* of ancient days (which are seen cut in stone on the gates of the main stupa of Sanchi) nor the symbol of the *hill-with-a-crescent* engraved very prominently in the centre of the base. The presence of this symbol on the unexpected lowermost part of the pillar is not without its significance. The pillar is not Asokan, but of an earlier date, and scholars are now inclined to believe it to be connected with Chandragupta Maurya, although Dr. Spooner could not decide whether it was erected by Asoka or Chandragupta. Some scholars think it to be the remains of Chandragupta's Hall of Audience.

(3) A small matrix bearing the same symbol of a three-arched-hill and a crescent (*Pl. 7, Fig. 3 of this art.*) was also dug out from 18 feet below the surface from the same site at Kumrahar.⁵

(4) Three terracotta dishes impressed with a seal in the centre bearing four symbols (*Figs. 1 and 2, Pl. 8, of this art.*) were excavated by Rai Sahib Manoranjan Ghosh at Bulandibagh from the Mauryan level of 15 to 18 feet, along with a large number of square or rectangular cast copper coins (*Figs. 3 and 4,*

¹ Silver 68.5 parts, copper with lead and other base metal 31.5.

² लक्षणाध्यक्षस्तुर्भागताम्रं रूपं तौक्ष्ण्यमुसीसाञ्जनानमन्यतमं माषकौज्यक्रं कारयेत् ।

³ See Num. Suppl., No. XLV, Pl. XX, coin No. 128, for symbol group and its find places in the 6th column.

⁴ A.S. of India, A.R., 1912-13.

⁵ A.S.I. Report 1912-13, Pl. XLIX, No. 10.

Pl. 8, of this art.)¹ scattered here and there exactly alike the two cast copper coins excavated at Sarnath from near the base of the Asokan Pillar, which also bear the two similar symbols of the hill-with-a-crescent, and the hollow cross like figure



Plate 6, Fig. 8 of this art. (with an elephant, a *swastika*,

a tree in railing, a Nandipada or the Brahmi *ma*, and a flag standard).² These dishes were exhibited at the annual meeting of the All India Numismatic Society in December 1933, at Baroda by Dr. K. P. Jayaswal, and explained by him to be of the Mauryan period, bearing the seal of the king.

Attention is specially drawn to the two symbols the hill with a crescent and the hollow cross described above which are also seen on the terra-cotta dishes, and also on the rectangular cast copper coins excavated from Bulandibagh (Patna) and Sarnath.

But the two cast copper coins bearing also the same two symbols with others described above which were dug out at Sarnath from near the Asokan Monolith, one from 1' 8" above and the other 1' 3" below the Asokan level there, according to the calculation of Mr. Ramaprasad Chanda in 1927 were pronounced by him to be of the Sunga period. It is curious that he did not take into account the depth of their finding in the Asokan level according to his own calculation, and wrongly assigned them a later date of 2nd century B.C., about a century later. The coins are undoubtedly of the Mauryan period, which is further corroborated from the find of a large number of exactly similar cast copper coins at Bulandibagh from the Mauryan level.

The interpretation of the seal impressed on the terra-cotta dishes, bearing the two particular symbols along with others described above, is that the seal is of the Mauryan period, and most probably they are the imperial marks, the Narendrāṅka or the Rājāṅka of the Mauryan king, and the dishes in the opinion of Dr. K. P. Jayaswal were in the use of the Mauryan army.

The system of putting the imperial marks on the imperial properties was well in practice in the time of the Mauryan kings, which is clearly established from the Arthashastra of Kautilya : he says in line 249 of Chapter 3, part V :—

कनकरेन्द्राङ्कं शस्त्रावरणमायुधगारं प्रवेशयेत् ॥

¹ The terra-cotta dishes and the coins are all in the Patna Museum, and I am indebted to Dr. K. P. Jayaswal who showed it to me and kindly supplied me with the photographs of the dishes.

² See figs. 3 and 4 of Pl. 8 of this Article. A.S.I.R., 1927-28, Sarnath excavations by Mr. Ramaprasad Chanda.

The arms and the allied objects are to be marked with the imperial-mark, and kept in the magazine (Āyudhāgāra); again in Part 2, Chapter 29, Pr. 46, he says :

परपशूनां राजाङ्केन परिवर्तयिता रूपस्य पूर्वं साहसदण्डं दध्यात् ।

‘When a person substitutes an animal bearing the royal-brand for a private one, he shall be punished with the first amercement’.¹ This shows clearly that the royal cattle were branded with king’s-mark, the Rājāṅka, just as is done in modern times; the bullocks and horses of the cavalry being branded in British India. The British Government Mark of an arrow-head standing on a capital I, I is impressed on every article of the Government of India, from a small steel-nib to swords and fire-arms like pistols, or big machine guns. The well known British Coat-of-arms depicted by a lion and a unicorn standing on the either sides of a shield with a crown is always seen impressed on the government stationery, publications, buildings, and even on the copper coins of 1835 and 1858.

To what Mauryan Emperor do these terra-cotta dishes and the cast-copper coins bearing the two particular symbols the hill-with-a-crescent, and the hollow-cross or square-cross belong ? An answer to this question is attempted below :—

(5) A polished monolith with Aśoka’s edicts engraved on it was dug out at Rampurwa, with a lion-capital in 1910. The lion capital is now kept in the entrance hall of the Indian Museum at Calcutta, and a big solid copper bolt about 25 inches long and over 4½ inches in thickness tapering at the two ends which originally connected the capital with the monolith is also preserved there mounted on the wall just behind the lion capital.

On the copper bolt are engraved in dots with a fine pointed punch four symbols, (*Fig. 5, Pl. 8 of this article*)² three of which are like those seen on the Bulandibagh terra-cotta dishes, and the rectangular cast copper coins described above. Only the figure of a small square as seen on the terracotta dishes is missing, but in its place is a Nandipada, along with another indistinct figure, to the left.

I do not think it a far fetched conclusion to say that the cast-copper coins and the terra-cotta dishes which also show two of the symbols, viz. the *hill-with-a-crescent* and the *hollow-*

¹ [The proper translation would be ‘One who substitutes others’ animals by the royal brand’. The unauthorized use of the royal mark is considered penal—Author.]

² I am indebted to Mr. N. G. Majumdar, Superintendent, Indian Museum, Archaeological Section, Calcutta, for kindly supplying me with the impression of symbols on the copper bolt.

cross, as on the copper bolt of the Asokan period, belong approximately to the same period.

As stated before, the silver punched coins bearing the *simple three-arched-hill-with a-crescent* symbol among others in a group, are probably of the period of Chandragupta, as well as the cast copper round and square, and the die struck coins of Magadha and Gandhara (Taxila) are also to be attributed to him. Those illustrated in *this Art. on Pl. 9, Figs. 1 to 10*, are all Chandragupta's N.-Western coins; and those on *Pl. 10, Figs. 1 to 4, of this art.* are his Eastern issues. (Also see C.C.A.I., Pl. II, Figs. 1, 2, 6, 7, 8, 9, 11, 12, 13, 14, 17, 19; Pl. I, Figs. 24 to 27 and 29.) It may be objected (1) that the symbol of the *hill-with-a-crescent* on the Sohgaura plate may be the mark of some officer, (2) that the symbol engraved on the base of the Kumrahar pillar may be a mason's mark, like the other marks, such as the 3 arrow heads, the nine small circles, and 3 straight lines, probably indicating the orientation and location of the pillar in the buildings, (3) that the hill-with-a-crescent symbol on the cylindrical matrix may be the mark of a private person: (4) the same symbol seen on the Bulandibagh terra-cotta dishes may be the potter's mark: and (5) the engraved figure of the hill-with-a-crescent on the copper bolt of Rampurwa may have been the copper-smith's mark. But the question arises as to how could the very same symbol can be the mark of an officer, a mason's mark, the mark of a private person, a potter's mark and a copper-smith's mark, when it is conspicuously seen on a large number of silver punch-marked coins, as well as on several types of cast-copper and die-struck coins of Magadha and Gandhāra (Taxila), both under the sway of Chandragupta Maurya.

The most plausible explanation of the above mentioned facts then seems to be that the symbol of the hill-with-a-crescent which was known in the early days was adopted by Chandragupta Maurya as his imperial mark, the Narendrāṅka or Rājāṅka mentioned by Kauṭilya, and is seen on his monumental remains, as the system of marking the imperial properties with his Rājāṅka was the practice of the period. The symbol it seems became the dynastic mark, as it is also seen on the Asokan monuments and coins, it appears also on the signed coins of Daśaratha¹ the grandson of Aśoka. Aśoka used the same symbol with an addition of the figure of the hollow-cross (*Fig. 8, Pl. 6 of this art.*) as both appear together on his monuments like those seen on the copper bolt of the Rampurwa monolith, Kumrahar terra-cotta dishes, and a large number of rectangular and round cast-copper coins found on the ancient sites of Magadha and

¹ The signed coin of Daśaratha is, illustrated in C.A.I., Pl. III, Fig. 5 which was first read and identified by Dr. K. P. Jayaswal published in the J.B.O.R.S., Vol. XX, of 1934 with illustrations on page 285.

Gandhāra (Taxila) illustrated in this article on *Pl. 8, Figs. 3 and 4* ; *Pl. 10, Figs. 5¹ and 13.²*

The theory that the hill-with-crescent symbol was connected with the emperor Chandragupta Maurya, was also confirmed by Dr. K. P. Jayaswal who identified it as the monogrammatic Rājāṅk of Chandragupta in his Presidential Address in the Seventh Indian Oriental Conference held at Baroda in December, 1933.

While surveying the work done during the year he referred to my identification of Chandragupta's silver punch-marked coins, bearing the hill-and-crescent symbol and as a further support of the theory gave a very befitting explanation of the story of the Greek writers referred to by MacCrindle in his famous book 'The invasion of India by Alexander the Great' about Chandragupta, that he was licked by a lion while asleep in a jungle, where he fled to save his life from the wrath of the Nanda king the Nandrus of the Greek writers, and that a wild elephant mounted him on its back, when he got awake. The story was naturally rejected by the historians as a myth. But Dr. Jayaswal very plausibly explained the story which originated from Chandragupta's die-struck Karshāpaṇa coin of Taxila bearing the figure of a standing lion with protruding tongue in front of the hill-and-the-crescent symbol as if licking it, and an elephant with the same symbol over its back, as illustrated on *Pl. 9, Fig. 4, of this art.³* The story most probably originated in Taxila on the basis of the coin, just as the origin of the Muhammadan story of Alexander's having a horn originated from the head-gear on his coins. The people knew the hill-and-crescent symbol as the Rājāṅka of the great emperor, and took this figure on the coins representing Chandragupta symbolically. The recognition of the Rājāṅka of Chandragupta, enabled the writer to identify the cast and die-struck copper coins, as well as the silver punch-marked coins of Chandragupta with some certainty as illustrated in this article on *Pl. 9, Figs. 1 to 10 and Pl. 10, Figs. 1 to 4⁴* of Magadha, Vidiśa and Gandhāra. The identified cast copper and silver coins of Aśoka, bearing the two symbols, the hill-and-crescent figure and the hollow-cross, are illustrated on *Pl. 8, Figs. 3 and 4 and Pl. 10, Fig. 5 of this art.⁵* A bronze passport, Mudrā of Aśoka, bearing the hollow-cross is also shown as *Fig. 13, Pl. 10, of this article*, it is not a coin and was obtained from Kosambi.

¹ Fig. 5, Pl. 10 of this art. is a Bronze Passport (Mudra) of Aśoka obtained from Kosambi.

² See C.C.A.I., Pl. I, Fig. 28 ; Pl. II, Figs. 15, 16 and 20 ; and Pl. III, Fig. 6.

³ See C.C.A.I., Pl. III, Figs. 1 and 2.

⁴ C.C.A.I., Pl. I, Nos. 25, 26, 27 and 28 ; Pl. II, Nos. 1, 2, 6, 7, 8, 9, 11, 12, 14, 17 and 19.

⁵ C.C.A.I., Pl. I, Fig. 28, Pl. II, Figs. 15, 16 and 20 ; Pl. III, Fig. 6.

It may be pointed out here that the hollow-cross symbol is not seen on the silver punched coins ; probably it was not used on the silver coins of Aśoka, but a peacock takes its place with the hill-and-crescent figure.

Carlyle¹ noticed the figure of a peacock engraved on the Asokan pillar of Lauriya Nandangarh, which he took to be the royal mark of Aśoka.

The peacock and the hill-and-crescent symbols are seen on some silver punched coins on both sides which can be attributed to Aśoka² illustrated on *Pl. 10, Fig. 12 of this article*.

THE HILL-AND-CRESCENT SYMBOL AS A REVERSE FIGURE.

Some of the pre-Mauryan coins which do not show any of the said recognised Mauryan symbols, are found to be punched on their reverse side with the hill-and-crescent symbol in a minute form, like some of the Mauryan silver punched-coins which also bear the same small mark on their reverse. The explanation of this observed fact comes in a simple way. The silver punched coins of the Nandas and earlier kings, the predecessors of the emperor Chandragupta, must have been in currency when he succeeded to the large empire of the Nanda emperors. According to Greek historians, when Alexander reached the river Hyphasis (Beas)³ he heard that the boundary of this empire was at a distance of ten days march or say about 150 miles from the said river. The current coins of the period of the Nandas, whom Chandragupta defeated, were not destroyed in one sweep throughout the empire, but must have remained in currency, along with the new punched-coins of Chandragupta.

And when all these coins of the preceding kings, together with the Mauryan coins, came to be checked and tested for their weights by the Rūpadarśaka, as was the practice in those days, they were punched on the reverse, with the hill-and-crescent symbol, the Rājāṅka of the emperor Chandragupta in his time. Many such coins are seen in several hoards ; there are some thirty coins of different symbol-groups, all pre-Mauryan, in my cabinet, as illustrated in the *corpus* published in the Numismatic Supplement, No. XLV for 1934, and J.P.A.S.B., Vol. XXX. Coins Nos. 6 and 8, Pl. IX ; Nos. 22, 23 and 26, Pl. XI ; Nos. 32, 34 and 35, Pl. XII ; Nos. 44, 45, 46 and 51, Pl. XIII ; Nos. 54, 56, 60, 62 and 63, Pl. XIV ; No. 71 of Pl. XV ; No. 83, Pl. XVI ; Nos. 87, 88. and 92, Pl. XVII ; Nos. 137 and 140, Pl. XXI, all these are put under the category of pre-Mauryan coins, and

¹ A.S.I., Report 1877-80.

² See coin Nos. 105, 106, and 107 on Pl. XVIII, (Num. Suppl., No. XLV).

³ *Cambridge History of India*, Vol. I, p. 372.

are seen punched on their reverse with the hill-and-crescent symbol.¹

Similarly the identified Mauryan coins illustrated on Pl. XVII, No. 96 ; Pl. XIX, No. 108 ; Pl. XX, Nos. 123, 125 and 127 (N.S., No. XLV) are also found punched on their reverse with the symbol of the hill-and-crescent, which was probably used by the Rūpadarsaka as the imperial mark for punching on tested coins in Chandragupta's time, on his as well as on the current coins of the preceding kings of Magadha. This seems to be the most plausible and natural explanation of the symbol, the Rājāṅka being punched on the reverse of the coins of Mauryan and pre-Mauryan coins both.

It may be objected that the hill-and-crescent symbol is also seen on a large number of silver and copper coins of the Western Satraps of the 2nd and 3rd century A.D. How could the symbol be taken as the Rājāṅka of the emperor Chandragupta ? The explanation again is naturally simple, and is derived from a careful study of the post-Mauryan coins of the Hindu kings from the 2nd century B.C. down to the 3rd century A.D. of Northern and Southern India. The hill-and-crescent symbol being adopted as the Rājāṅka by Chandragupta in the beginning of the 4th century B.C. continued as the dynastic symbol on the Mauryan coins for several generations as described before, and was conspicuously the chief symbol on the currency of the period, having had a very wide circulation in the biggest empire in India, and thus persisted with some modification even on the coins of the Sunga kings, and others who succeeded the Mauryas. The copper coin of Bahasatimita (Brhaspati Mitra) bears the same symbol of the 3 arched hill-and-crescent standing on a railing with a Nandipada on its top in place of the crescent (see *Fig. 6, on Pl. 10, of this article*).²

The coins of Pushyamitra, and Agnimitra of the Sunga dynasty retained the same hill symbol, but without the crescent, as described and illustrated by Dr. K. P. Jayaswal in the *J.B. & O.R.S.*, Vol. XX, Parts III and IV of 1934.

On the silver and cast-copper Kuninda coins it was further modified into a hill of 6 arches of 3 stories with a Chhatra on top, as illustrated on *Pl. 10, Fig. 7 of this article*.³

On the cast copper coins of Kosambi with the lanky bull, it appears as a bare hill of 6 arches in 3 tiers as in *Fig. 10, Pl. 10, of this article*.⁴

We see the same symbol further modified on the lead and potin coins of the Andhras of the south. Gotamiputra Vilivaya-

¹ See reverse symbols in the 4th columns of the plates referred to above.

² C.C.A.I., Pl. V, Fig. 11.

³ C.C.A.I., Pl. V, Figs. 2 and 3.

⁴ C.C.A.I., Pl. V, Fig. 7.

kura has a hill of 10 arches of 4 tiers with a Swastika on his coins (see C.C.A.I., Pl. XXI, 6). Gotamiputra Śrī Yajña changed it into a hill of 6 arches of 3 tiers, with a crescent on its top, and added a conch and a flower on either side of it, with a wavy line below, on his silver and lead coins, as illustrated on Pl. 10, Fig. 9 of this article.¹

On the coin of Mulandā it is seen as a hill of 8 arches of 3 tiers the topmost being bigger, as illustrated on Pl. 10, Fig. 8 of this article.

The Western Satrapas adopted the same symbol in its original simple form of the 3 arched hill-and-crescent with a further addition of the sun and crescent on the right and left side of it with a wavy line below, representing a river; an illustration of the silver coin of Rudradāman I, son of Jayadāman dated Saka 87 (A.D. 165), is given on Pl. 10, Fig. 11, of this article.

The symbol continued for about a couple of centuries on the Satrapa coins of Malwa and Gujarat till the rise of Chandragupta Vikramāditya, who replaced the hill-and-crescent symbol with his Garuḍa emblem on his silver coins of the same type, when he conquered Malwa and the symbol of the hill-and-crescent disappeared for ever, having persisted for over six centuries in various forms on the silver, copper, lead, and potin coins of northern and southern India. Several such examples of a symbol or figure persisting for centuries on the coins of various kings in different parts of the country are known in the Indian Numismatics, for instance the symbol probably representing the Rājāṅka of the Great Kushans seen on their Dinars, Fig. 4, Pl. 6 of this art. continued for several centuries on the coins of the Great and later Guptas. The Horse-man and the couchant Bull seen on the coins of the Brahmana King of Ohind and the Kabul Valley, continued somewhat modified on the coins of the Tomar dynasty of Ajmer, the Rathours of Kannauj, the Chauhans of Delhi, and the Narwar kings who imitated the same figures on their coins, even the billon coins of Mahammad-bin-Sam. Altamash and his successors bear the same figures. It appears that the moon-on-hill symbol existed in a slightly different form before the Mauryans came to power who adopted it as the royal mark, giving it a definite form of a 3-arched hill with a crescent on its top. It is seen as 3 arched hills adjacent to each other, the middle one being the bigger of the two, and topped with a crescent on the early copper punched coins of Rajgir of the 100 Rattis weight of the time of Bimbisāra the father of Ajātaśatru the contemporary of Buddha, as illustrated on Pl. 9, Fig. 11, as Fig. 5, Pl. 6, of this article. There is a clear mention of it in the early Buddhistic Aṭṭha-Kathā :—

तदा राजगहे बीसतिमासको कदापणो होति । तस्मात् पंचमासको पादो ।²

¹ C.C.A.I., Pl. XII, Fig. 9.

² Aṭṭha Kathā Vinaya Piṭaka II Parāgika.

In the city of Rājagaha (Rajgir) Kārshāpanas of 20 Māshakas¹ or 100 Rattis were prevalent, and a Pāda of 5 Māshakas.

Its other form on the probably pre-Mauryan silver punched-coins is somewhat like the above described figure of 3 arched gates standing separately, the middle one being the bigger of the two, but without a crescent, as illustrated on *Pl. 9, Fig. 13*; like *Fig. 6, Pl. 6 of this article*.

Its third modified form on silver punch-marked coins is seen enclosed in another arch without any crescent but standing on a tank containing two swimming fishes, with a Damaru on the top of the enclosing arch, as is seen on the silver coins of pre-Mauryan type illustrated on *Pl. 9, Fig. 12*; like the *Fig. 7, on Pl. 6 of this article*.

Fig. 8, Pl. 6 of this art. The figure of a peacock perched on a hill, has been already described, it seems to be connected with Aśoka, see coin *Fig. 12, Pl. 10, of this article*. His other silver coins bearing other symbols have not been identified as yet. Similarly the silver punched-coins of Bindusāra his father is awaiting identification.

It would not be in vain to search them out of the coins illustrated in the Numismatic Supplement No. XLV, on Plates XVII and XVIII from amongst the coins Nos. 93 to 104.

Another conspicuous symbol *Fig. T, Pl. 6 of this art.*, described as bales of cotton by Cunningham and Caduceus by Theobald, appears on the obverse of pre-Mauryan coins, but it reappears with the hill-and-crescent symbol on the coins of the Mauryan period, and is also seen on the reverse of the Mauryan coins only. Whether it was reintroduced by Chandragupta or Bindusara or Asoka on the coins, is difficult to say in the present circumstances of our scanty knowledge about the symbols.

It will be seen by the study of the group-symbols of the Early, the Middle period² and Mauryan coins, that some of the symbols seen on the Mauryan coins were quite new which never appeared on the Early or the Middle period coins, while some are exactly similar to those which were punched on the coins of the Middle period and the Early coins.³

Fig. I, Pl. 6 of this article is another pre-Mauryan symbol which appears on the obverse and reverse of pre-Mauryan coins but has not been seen on the Mauryan coins.

Fig. B, Pl. 6 of this article is another noteworthy symbol, and is one of the earliest figures known on the punched coins. I have not seen a single hoard of early or later period coins in

¹ The Māshaka was a copper coin of 5 Rattis mentioned by Kautilya and Manu.

² Described in the next Chapter of this article.

³ Compare the symbol groups of Pls. XVIII, XIX and XX with those illustrated on Pls. I to VIII and IX to XVII of N.S. No. XLV, or J.P.A.S.B., Vol. XXX.

which the symbol is not seen either as a single figure or in combination with compound symbols. The only exception is the lot of 33 bent-bars, *Śalākās* of 100 Rattis weight found with other 1,173 pre-Mauryan coins and the drachm and tetra-drachm of Alexander, excavated from the Bhir mound, the earliest site at Taxila, by Sir J. Marshall in 1924-25.¹

This figure was designated as the Taurine symbol by previous scholars, but Sir J. Marshall calls it the *Nándipada*, and Dr. Jayaswal thinks that it may be the Brahmi ४ M on the Mauryan coins as it appears inverted like *Fig. 9, Pl. 6 of this art.* on their cast copper coins similar to the letter M on some of the Asokan inscriptions.

In what sense it was actually used in the very early days of the Buddha and perhaps pre-Buddha times is difficult to say at present. A careful survey of all the symbol-groups as stated above will show the truth of the statement. It seems to be one of the earliest symbols which survived for a long time but is now forgotten.

III. SILVER PUNCH-MARKED COINS OF DIFFERENT PERIODS AND LOCALITIES.

In the first part of my article published in the *Num. Suppl.* No. XLV, and *J.P.A.S.B.*, Vol. XXX, silver punched coins have been divided into three periods, and tentatively designated there as the coins of the *later*, *middle*, and *early periods*. The terms and divisions need explanation and elucidation with facts and figures.

It is a well-known fact that the system of manufacturing inscribed coins of silver and copper cast or die-struck, bearing the name of the King in the genitive form came in vogue, in Northern India most probably after the Indo-Greek system of coinage from the 3rd quarter of the 2nd century B.C., though the punched coinage continued up to the 3rd century A.D., and in the Deccan their gold coins² with or without legend with punched symbols are known up to the 9th century of the Christian era. In the opinion of some scholars the silver-punched coins were minted so abundantly in the 3rd century B.C., that they remained in currency up to the 1st or 2nd century A.D. in the Northern part of the peninsula.

A large number of copper and some silver inscribed coins were published long before by Sir A. Cunningham in his coins of Ancient India. Most of them have been read and identified to be the coins of the last quarter of the 2nd and beginning of the 1st century B.C. of the Sunga Kings who succeeded the Mauryas,

¹ Archaeological Survey of India Report, 1924-25, Pl. IX.

² A gold punch marked coin of the Deccan is illustrated on Pl. 11, Fig. 7 of this article, note the legend at the bottom side.

by Dr. K. P. Jayaswal both on the basis of palæography and the Pauranic records of dynasties which are now recognized by most of the Western scholars like Rapson, Rhys Davids, Pargiter and others. It should not be understood that the inscribed coins were first introduced in the last quarter of the 2nd century B.C. in the country. The system of minting inscribed coins was known in the time of the Mauryas specially on the copper coins, or even earlier in the N.W. part of India, as is evident from the copper coins illustrated in C.C.A.I., Pl. II, Figs. 17, 21 and 22 ; and Pl. III, Figs. 5, 8, 9, 10, 11 and 13 of which the coins No. 17, Pl. II, and No. 5, Pl. III are undoubtedly Mauryan as they bear the simple figure of the hill-and-crescent. These coins have been read, identified and published by Dr. Jayaswal in the J.B. & O.R.S., Vol. XX, of 1934 and also mentioned in the J.R.A.S. of October 1935, to be the Mauryan coins of the N.W. parts of the country.

The punch-marked coinage was at its zenith and minted abundantly in the time of the Great Mauryas, after which it declined being displaced by the issue of inscribed or 'signed' coins (as Dr. Jayaswal calls them) by the Sunga kings. These identified Mauryan punch-marked coins have been designated as the coins of the *later period* by me, the term being synonymous with the Mauryan period.

COINS OF THE MIDDLE PERIOD.

The ancient kingdom of Magadha which was no bigger than the modern districts of Patna, Gaya, Monghyr and Bhagalpur in the time of the Buddhā¹ began to expand into an Empire from the time of Ajātasatru who came to the throne about eight years before the Nirvāṇa or death of Gautama Buddha, by engulfing the confederacy of Vaisali—modern Tirhut, the kingdom of Kōśala, modern Oudh including Kāshi, modern Benares; and in the time of the Nanda Kings some 150 years after, the Empire of Magadha further expanded by adding Avantī, modern Malwa; Panchāl² modern Farrukhabad, and the Bareilly Divisions; and the kingdom of Śūrasenas of Mathurā, reaching up to the border of the Punjab when Dhana Nanda, the contemporary of Alexander was ruling over Magadha, the then biggest Empire in Northern India in the last quarter of the 4th century B.C. All the said records are counted as the historical facts by Western scholars³ and also mentioned by the Greek historians.

¹ *Cambridge History of India*, Vol. I, Chap. VII.—The Early History of the Buddhists by Dr. Rhys Davids, pp. 171 to 174.

² *Ibid.*—Chapter XIII by Prof. Rapson, pp. 305 to 316.

³ Pargiter, Rapson, Vincent Smith and others. A mention of the Great Magadha Empire is made by the Greek historians in the time of Alexander. See *Camb. Hist. of India*, Vol. I, p. 372.

As it is now fully established without an iota of doubt that the silver punch-marked coins were in currency long before the Alexander's invasion of N.-W. India, we cannot ignore the silver and copper punched coins of the Magadha Kings from the time of Ajātaśatru down to the Nandas. It seems an impossibility to think that the Nanda Kings and their predecessors could have managed the vast Empire of Magadha without any silver and copper coinage, if not gold.

What and where are their coins will be the question confronting us. But the answer is very simple and comes from the punch-marked silver coins themselves.

The coins are generally found mixed abundantly with the Mauryan coins bearing the hill-and-crescent symbol up to the present day from one end of the country to the other, we handle them without knowing, whenever we handle a lot of punch-marked coins. They are awaiting identification.

Sometimes they are found in hoards without any Mauryan coins. I know of two such hoards consisting of purely pre-Mauryan coins, which I had the opportunity of carefully examining. The one is already published by Sir J. Marshall a hoard of 1,173 coins as the Bhir mound Taxila hoard found with the coins of Alexander and Philip Aredæus his successor, and a Persian coin of the Daraius type in the A.S.I. Report, 1924-25, with illustrations. Another lot was purchased by Mr. Srinath Sah of Benares from Ahraura town of Mirzapur District. Only 150 coins out of 300 or more could be secured, the rest went to the melting pot. All these coins appear to be hoarded before the Mauryans came to power, as not a single coin bearing the hill-and-crescent symbol is seen on them, neither on the obverse nor on the reverse side of the coins. Some 50 of these coins are in my cabinet which I have illustrated on Plates IX to XVII, with a mention of their find-place in the 6th column of the plates, in the Numismatic Supplement No. XLV for 1934.

All the coins from the successors of Ajātaśatru¹ the contemporary of Buddha down to the last Nanda king, who was succeeded by the Mauryans, are designated as the punched-coins of the Middle Period in the article, for the sake of differentiation and identification. The identified Mauryan coins help to differentiate them chronologically. All such coins as far as I could collect up to 1932, are illustrated in a tentative chronological order (described hereafter) on Pls. IX to XVII, coins Nos. 1 to 92 in the Numismatic Supplement No. XLV, now awaiting identification of their kings by the scholars and numismatists.

¹ Ajatasatru came to the throne about 8 years before the demise of Buddha in about 491 B.C., *Cambridge History of India*, Vol. I, p. 312, but according to Ceylon Chronology in 552 B.C.

The Mauryas could not have been the only kings who minted the Punch-marked silver coins, as some numismatists have thought it to be the case.¹ It appears that these earlier rulers coined abundantly, so much so that even after their downfall, and the change in the system of coinage, they continued in currency up to the 2nd century A.D.

EARLY PUNCH-MARKED COINS.

A brief political and geographical history of Buddha and pre-Buddha period, though scanty would be helpful for the explanation and identification of Early punched-coins.

It is now historically recognized by the indologists and historians from the study of Early Sanskrit and Buddhist literature that India before Gautama Buddha was divided into many big monarchies, and small kingdoms, as well as some republics of free clans,² of which 16 monarchies are specially mentioned in the early texts, they are :—

Āṅga³ (modern Bhagalpur and Monghyr Districts).

Magadha (a portion of Southern Behar, Patna and a part of Gaya District).

Videha (Janakpur and the vicinity in N. Behar).

Kāśī (Benares District).

Kośala (Oudh).

Vajji (Vaiśālī of Lichhavis in N. Tirhut).

Vamśa or Vatsa (Allahabad District on the S. bank of the Jumna river).

Pāṇchāla (Bareilly and Farrukhābad Divisions).

Kuru (Meerut and Delhi Districts).

Surseni (Mathura District).

Avantī (Málwa).

Gāndhāra (Peshāwar and Frontier Districts).

Kāmbōja (Territories to the N.-W. of Indus).

Kaliṅga (Orissa).

Sauvira (Sophr in Ptolemy, the sea board in Sindh).

Malla, Cheti, Machha and Assaka are also mentioned but their location is not correctly identified.

Out of these kingdoms and monarchies of Northern India, the following kingdoms are specially mentioned of the lifetime of Buddha which had undergone some political and geographical changes :—

¹ The Mauryan Silver punched coins indicate a highly evolved stage of coinage as compared with the early punched coins.

² *Cambridge History of India*, Vol. I, p. 175.

³ *Ibid.*, p. 172.

Kośala¹—including Kāśī—(modern Oudh and part of U.P.), in area about the size of France, with its king Pasenadi or Prasenajit, the contemporary of Buddha.

Magadha—(Patna, Gaya, Bhagalpur and Monghyr Districts), with its old Capital Rājagaha—Rajgir, the ruins of which are considered the oldest identified remains in Behar, with Bimbisār its king also contemporary of Buddha. The kingdom was further expanded into an empire by Ajātaśatru his son, after the lifetime of Buddha, who invaded Kāśī, the Vajjian confederacy of Vaiśālī (N. Tirhut) and the great kingdom of Kośala,² and built a fortress at Pāṭaliputra on the southern bank of the Ganges in about the middle of the 6th century B.C.

Avantī,—including Assaka (Malwa), whose king was Pajjot (Pradyota) also contemporary of Buddha, with his capital Ujjeni.

The kingdom of Surasenas of Madhura (Mathura) with its king Subāhu another contemporary of Buddha.

Vamsa or Vatsa—(on the Southern bank of Jumna in the Allahabad Division), with its capital Kosāmbi modern Kosam, with its ruler Udena also a contemporary of Buddha, though there is no mention of Pāñchāl and Gāndhāra and some Southern Kingdoms of Saurāstra and Āndhra in the Buddhist books, yet they all existed undoubtedly in the time of Buddha.

Coins were current in the lifetime of Buddha and even before his birth, which are clearly mentioned with their names in the early Buddhistic literature like Aṭṭhakathās already referred to before, and the early Jataka stories which deal with the social and economic life of 7th and 8th centuries B.C. The commentary of Vinaya Pitaka³ tells us that in the time of Bimbisāra Pādas of 5 Māshakas or 25 Rattis were prevalent, Kārshāpaṇas of Silver and Gold Nishka and Copper Māshakas are also mentioned in the stories of Champeya, Bhūri Dutta, Udaya and Saṅkhaṇḍa Jātakas, as stated by Dr. Bhandarkar in his Carmichael Lectures, 1921.⁴

Cunningham in his coins of Ancient India has emphatically mentioned in two places⁵ that Kahāṇa (Kārshāṇa) was known in the lifetime of Buddha.

In conclusion it can be safely said that copper and silver punched coins existed in the time of Buddha and were current in the different independent monarchies of his period.

Again to the questions whether the punched silver and copper coins of the Buddha's lifetime still exist? If available, how could they be identified?

¹ *Cambridge History of India*, Vol. I, pp. 178 to 188 by Rhys Davids.

² Vincent A. Smith's *Oxford History of India*, p. 46.

³ Dr. Bhandarkar's *Carmichael Lectures*, 1921, p. 111, Calcutta University Press.

⁴ *Ibid.*, pp. 48-50.

⁵ *C.C.A.I.*, pp. 20, 42 and 54.

My humble reply is that they exist, and are available and can be identified to some extent. There are silver and copper punched coins in my own cabinet, and in the cabinets of other numismatists, as well as in the Museums of Lucknow, Patna, Bombay and Taxila, which I have reasons to believe are of early types of the period of Buddha, of the different monarchies which were independent at that time, like the small kingdom of Magadha before it expanded into an empire. Kośala, Pāṇchāla, the kingdom of Surasenā, Asmaka and Gāndhāra, which I have already studied—of these only 3 types of the local coins of Magadha, Kośala, Surasenā have been illustrated in my paper published in the Numismatic Supplement No. XLV for 1934, and also in the Journal and Proceedings of Asiatic Society of Bengal, Vol. XXX, 1934, No. 3.

The early local Gāndhāra (Taxila) punch-marked coins were published partly and illustrated by Sir J. Marshall in the Archaeological Survey of India Report, 1924-25.

The Wai hoard now in the Bombay Museum published by Cordington in the J.B.B.R.A.S., Vol. XII. are probably the early coins of Asmaka.

There are two new hoards of early types now sent to me for classification—one of which I think comes from the site of Ancient Pāṇchāla, a description of which will be published soon.

All such local coins of the lifetime of Buddha and earlier of the then independent monarchies of Kośala, Magadha, Surasenā, Saurāstra and Gāndhāra excavated from the localities which lie within the identified area of those ancient kingdoms are classed as the punched coins of the Early Period, and I do not think it an unnecessary repetition to describe them again, with reasons for classifying them as such, into the three chronological divisions, described before.

(1) The punched coins of Buddha and pre-Buddha periods of a different standard weight of 25 Rattis, which are found from particular identified localities of the ancient independent kingdoms, from the middle of the 6th century B.C.¹ and earlier back to the 7th or 8th century B.C., are classed as the Early coins. They generally bear 4 bold and rarely one to two symbols, of crude, but bold and simple designs.

(2) Punched coins of the post-Buddha period down to the time of last Nanda King, when Magadha became an Empire in Northern India already described before, which are met even now from places situate wide apart in the country, of 32 Ratti standard weight, with 5 symbols, of many similar types in every hoard, are classed as the coins of the Middle Period—of the times covering from the middle of the 6th century B.C. to the last quarter of the 4th century before Christ.

¹ Buddha died in 483 B.C. according to Rhys Davids, but in 544 B.C. according to Ceylon texts, which seems to be authentic.

(3) The punched coins of the Mauryan¹ period most of which have been identified by me are the Imperial coins of Magadha the biggest Empire in ancient Indian History, and of 32 Rattis standard weight; they are found up to the present day in large numbers, generally mixed with the pre-Mauryan coins from one end to the other of the country, even from the border of Sistán, Kabul Valley and Deccan, have been designated as the punched coins of the Later Period, ranging from the last quarter of the 4th century B.C. down to the last quarter of the 2nd century B.C., when the Śunga Kings came to power. It is well known now that after the down-fall of the Mauryas—the system of punched coins was displaced by the signed or inscribed coins. No punch-marked coins of the 1st century B.C. are known to exist, though they were current probably for several centuries, after the Mauryas.

Three very much worn silver punched coins weighing only 35 and 42 grains instead of 57·6 grains the full weight were discovered by Cunningham from the deposit at the foot of Vajrāsana (Buddha's throne) in the temple of Mahābodhi of the 2nd century A.D. at Buddhagaya—clearly indicating that the coins represent a degenerated condition of silver currency and were worn nearly blank by long use.²

Coins of two different hoards illustrated on Pls. I, II, III and VI in the Num. Suppl. No. XLV, each of a peculiar type and particular symbol-groups of 2 different periods found from places situated in the identified area of the then independent Kingdom of Kośala of pre-Buddha or post-Buddha days are now known. No coins of these two types and symbol-groups have been excavated in any other part of the country up to this time like the other common punched coins.

I think it would not be wrong to allot them to the kingdom of Kosala to the period when it was an independent kingdom, before Ajátasatru engulfed it into Magadha in the middle of the 6th century B.C. These coins may be of the lifetime of Buddha or of the period before his birth.

The said coins in my collection were found on weighing to be about 24 Rattis or 43 grains or a little below, hence I took them to be the coins of 24 Rattis standard weight as mentioned in my previous thesis, but this was not an accurate calculation, some allowance should have been made for their wear and tear due to their old age. They are actually of 25 Rattis standard weight, is further supported by another hoard of over 1,400 coins exactly of the type and symbol-groups as illustrated on Pl. VI of the Num. Suppl. No. XLV, excavated from Kheri District of Oudh, now in the Lucknow Museum, known as Paila hoard.

¹ Chandra Gupta Maurya came to the throne in 321 B.C. *Cambridge History of India*.

² For illustration of the coin, see Fig. 15. Pl. I, C.C.A.I., and its description on p. 55.

The majority of coins in the lot weigh over 24 Rattis and some are as heavy as 24·7 Rattis, and I now take the opportunity to correct it. They are the Pādas or $\frac{1}{4}$ of 100 Rattis standard weight coins, which were current in the lifetime of Buddha and even earlier. There is a mention of this 25 Ratti Kahapana, Kārshāpāna in the Aṭṭakathā referred to before; in the Śatpatha Brāhmaṇa coins of 100 Rattis are mentioned which are not known in Kauṭilya's or Manu's works which are of relatively later dates.

I also conclude that in the lifetime of Buddha and earlier, copper and silver coins of 25 Rattis and their multiples, of 50 and 100 Rattis weight or sub multiples, of 25 and 12½ Rattis were current. All such coins are already existing in the Taxila Museum,¹ and there are some in my own cabinet, which I shall publish when describing the copper punch-marked coins in another article.

Another lot of 25 well preserved coins illustrated on Pl. XXXI in the Num. Suppl., No. XLV, which were purchased from Mathura fresh from a hoard, 2 or 3 of them weigh a little over 25 Rattis—which may be due to the selection of a heavier Ratti in that locality. These coins also come under the same category of 25 Rattis weight, bearing 4 bold, crude and simple symbols and are the local coins of the independent kingdom of Surasenā of Chandra Bansi dynasty of the period long before Mahāpadma Nand included it in his Empire of Magadha in about 350 B.C. I am inclined to put the coins two centuries earlier in the lifetime of Buddha, being of the Pāda type.

Another lot of coins illustrated on Pl. VIII of the N.S., No. XLV, which are the half Purāṇas of 16 Rattis come under the category of post-Buddhistic coins. A hoard of 1,251 exactly similar coins was excavated in the Unao District (Oudh) now in the Lucknow Museum, a brief description of which has already been given before, as well as the Golakhpur hoard illustrated on Pls. IV and V of the N.S., No. XLV, which have been published by Mr. Walsh in the J.B. & O.R.S. seem to be the coins of post-Buddhistic period. As stated elsewhere, the Golakhpur coins are a connecting link between the Early and the pre-Mauryan coins. They are the earliest known coins of 32 Rattis weight with 5 symbols, bearing chiefly the figure of the sun² and a Chakra.³

The coins are most probably of the time of Uddai Bhadda son of Ajātasatru of Magadha of the 5th century B.C. as described before.

Other coins obtained from Magadha of a finer execution, and of 32 Rattis standard weight bearing the similar 2 symbols

¹ Not yet published—The coins are illustrated on Pl. VII, of this article, Figs. 1 to 5.

² Probably representing Surya Vansi Kings of Magadha.

³ The Chakra symbol probably is indicative of Chakravarti Rājā.

of the sun and the Chakra with variations may be taken as the coins of the Surya Vansi Kings and Emperors of Magadha.

And it is not wrong to say that the coins bearing the symbols of the sun and a Chakra along with other three figures are all of Magadha Empire of the post-Buddha period, notwithstanding, that they are found up to this time from one end to the other of the country.

The above mentioned facts and reasons may not appeal to be fully convincing to scholars not thoroughly acquainted with the silver punch-marked coins of different types, but the theories offer the most befitting explanations of the facts and findings, of the early history and geography of India in the lifetime of Buddha, and the findspots of such crude local coins as well as their weight of a different standard of 25 Rattis, not known to Kautilya or Manu, but mentioned in the early Brahmana and Buddhistic books.

GROUPING OF SYMBOLS ON THE PUNCHED COINS.

As stated before the Early coins of Buddha and pre-Buddha periods of different independent Kingdoms of Northern India are generally punched with four symbols¹ in methodically arranged groups, two of which remain unchanged while the remaining two are varied, forming sometimes long series.

The most natural explanation of changing of two symbols, with the other two remaining as constant figures on a particular type of coins found from different localities, can be that either a symbol was changed leaving the first three unchanged every time whenever a fresh batch of coins was struck, or the change was made every year to differentiate them from the coins of the previous years in the reign of the same king. The other or the 3rd symbol was probably changed when a new king of the dynasty came to the throne. If this theory be correct then it can be inferred that in a batch of early coins consisting of a series of symbols of a particular group,—the series with the variations of the 4th symbol may belong to one king, and those with a variation of 2 symbols also forming another series may be of another king of the same dynasty; a few examples will not be out of place here.

Take for instance the early coins illustrated on Pls. I, II and III, Num. Suppl., No. XLV, the coins Nos. 2, 3, 4 and 5 seem to be of one king, but Nos. 6, 7, 8, 9 and 10 may be of another king of the same dynasty and the coins Nos. 11 and 12 may be of a 3rd one.

¹ Coins bearing one or two symbols of the early period are also met but are very rare. There are two such coins in my Cabinet from Madhuri, Dist. Arrah.

The same case appears with the early coins illustrated on Pl. VI. Where the coins Nos. 1, 2, and 3 are probably of one king but Nos. 4 and 5 may be of another monarch of the same dynasty, and so on.

The same condition holds good in explaining the variations of symbols in the series of a particular group-symbols on the coins of the pre-Mauryan and Mauryan monarchs and emperors, which bear groups of 5 symbols where the two symbols remain as constant figures with the variation of the 3rd for the king and the remaining 2 for the change of years and place most probably. For example the post-Mauryan early coins of the Golakhpur hoard of the Magadha Kingdom, illustrated on Pls. IV and V. Num. Suppl., No. XLV, show the same variations.

It will be noticed that the 1st two symbols remain the same on all the 105 coins but the 3rd changes : in coins Nos. 4 to 63, the 3rd symbol is the same, they seem to belong to one king, the 4th is also the same, only the 5th is varied. Coins Nos. 70 to 89 have another symbol as their 3rd figure in the group, the 4th remains also the same in all the 10 coins with variations of 5th symbol, these coins may be of another king of the same dynasty. Similarly coins 98 to 100 have an elephant as the 3rd symbol in the group, they seem to be of another king of the same dynasty, and so with the coins 101 and 102.

There is no question that all these coins belong to one dynasty having been found in a single hoard from one place, as already described on pages 13 and 14 of the N.S., No. XLV.

Many such instances of the pre-Mauryan coins can be cited, but I would suffice with one more example to avoid lengthening.

The study of symbol-groups illustrated on Plates IX to XVII, up to coin No. 92 would clearly indicate many such instances of variations of symbols in the series of group-symbols.

Group symbols illustrated on Pls. XIII, XIV and XV from coins Nos. 45 to 92 of the N.S., No. XLV, will show the 1st two symbols, the figure of the sun, and the Chakra (formed of 3 Nandipadas in ovals and 3 arrow heads placed symmetrically round a small circle with a dot) remaining as constant figures, but the 3rd symbol has changed probably with the change of the king.

On coins 45 to 47, the 4th figure also remains the same, they seem to be of one king while coins 48 to 49 may belong to another and coins 51 and 52 may be of a third monarch of the same dynasty. But the coins 53 to 65 forming a long series are undoubtedly of another king of the same dynasty who probably reigned for a longer time.¹ The coins of this class 29 are found

¹ Several other coins of class 29 series with different variations of 4th and 5th symbols, not illustrated on the above plates, have been noticed in other hoards after the publication of my article—they all seem to be of the same King.

in majority in every hoard I have come across up to this time, next to Mauryan coins with which they are mixed, and even in the hoard of pre-Mauryan coins they are found in majority—I have noticed this in the Tereгна, Purneah and Gorhoghat¹ hoards which contain Mauryan coins, in the Patna Museum; in the Wadia collection of the Bombay Museum, and in the Peshawar hoard described by Dr. Spooner.²

They are also found in majority in the pre-Mauryan hoard of Bhirmound (Taxila) published by Sir J. Marshall.³

It appears that the said coins of class 29,⁴ which are found mixed abundantly with the Mauryan coins are the coins of the immediate predecessor of Chandragupta, and it is suspected to be the coins of Mahāpadma Nanda, the son of a Śūdra woman who ruled for 28 or more years and was powerful to expand the Magadha Empire still further by adding Kalinga⁵ (Orissa) and the kingdom of Surasenas⁶ (Mathura Dist.).

Though there is no numismatic or archæological proof of its identity yet the probability is in favour of Mahāpadma Nanda of the New Nanda Kings. Now coming to the Mauryan coins illustrated on plates XVII to XX, Num. Suppl., No. XLV, from coins Nos. 93 to 131, all bearing the hill-and-crescent symbol, the Rājāṅka of Chandragupta, which became the dynastic symbol of the Mauryas, as shown before, it will be noticed that the 1st 3 symbols of the groups in the entire series remain as constant figures on all the coins, but the 4th symbols of the groups are varied, forming the series of their own classes.

Coins Nos. 93 to 104 of class 40A may be the coins of a particular Mauryan King. Coins No. 105 to 107 of class 40B, with a peacock may be of another; similarly coins 108 and 109 of class 40C; Coins 110 to 112, of class 40D; coins 113 to 115, and 121 to 124 of class 40E; coins 128 to 130 of class 40J, seem to be the coins of different Mauryan kings.

In all there have been found up to the time 9 different classes, from 40A to 40J, with variations of the 4th symbol in the groups, one of which the class H was recognized by me to belong to Chandragupta, specially coin No. 128, on account of its find all over India, and its metal ingredients tallying with those described by Kauṭilya; the other 8 may be the coins of his 8 descendants in the dynasty.

It could not be said in the present circumstances as which of the remaining 8 classes belong to what king.

¹ Published by Mr. Walsh in the *J.B. & O.R.S.*, Vol. V, 1919, pp. 160-164.

² Published by Dr. Spooner in the *A.S. of India Report*, 1905-6.

³ See *A.S. of India Report*, 1924-25.

⁴ See Pl. XIV, Num. Suppl., No. XLV.

⁵ *Cambridge Hist. of India*, Vol. I, pp. 313 to 315, by Prof. Rapson.

⁶ The country of Surasenas was usurped by Mahāpadma Nanda. Pargiter *A.I.H. Traditions*, p. 180.

Dr. K. P. Jayaswal has given a genealogical table of the Mauryan dynasty from the Vayu and Brahma Purāṇas ¹ which may be enumerated here :—

- (1) Chandragupta Maurya—who ruled the Empire of Magadha for 24 years.
- (2) Bindusāra his son—who ruled for 25 years.
- (3) Aśoka the grandson of Chandragupta—who reigned over a bigger Empire than his grand-father, for 36 years.
- (4) Daśaratha the grandson of Aśoka was on throne for 8 years only.
- (5) Samprati son of Daśaratha wielded the power for 9 years.
- (6) Śāliśuka—ruled for 13 years.
- (7) Devadharman—reigned for a short time of 7 years.
- (8) Śatadharma was in power for 8 years.
- (9) Bṛhadaśva the last, ruled for 7 years.

It may be noted that only 9 Emperors and kings of the Mauryan dynasty are mentioned in the Purāṇas and recognized by the scholars, the Mauryan coins as illustrated are also of 9 classes, known up to this time as described before.

May it not be that these 9 classes of coins all bearing the hill-and-crescent symbol belong to the very 9 Mauryan monarchs of which 2 have been identified.

But there may be other coins of different symbol groups belonging to the Mauryas, over and above the coins already illustrated, but they have not been identified as yet.

CONNECTING LINKS BETWEEN TWO SYMBOL GROUPS.

On a careful examination of the illustrated symbol groups in the 3rd columns of the plates, it will be noticed that the change of location of the last symbol in the group changes the group series, and the coin which indicates such a change, stands as the connecting link between the two series of the same class.

Take for instance coins 1, 2 and 3 on Pl. I (N.S., No. XLV) it will be noticed that Nos. 1 and 2 bear the first 3 symbols common to both, marked as class L A ; the fourth symbol of the coin No. 2, is a design of 5 crescents with stars in their arms put round a small circle symmetrically, this very figure appears as the 3rd symbol on the coins Nos. 3, 4 and 5, with a hexagram as their 4th symbol in the group, marked as class L B.

Thus it can be said that the coin No. 2, is a connecting link between the classes L A and L B, and indicates the order,

¹ *J.B. & O.R.S.*, Vol. XX, of 1934, p. 279.

viz. that the coins Nos. 3, 4 and 5, should be placed after the coins Nos. 1 and 2, as is done on the plate or vice versa.

This is not without a significance.

The same methodical change of location of the last symbol in a group is also observed in the various series of different classes of coins of the pre-Mauryan and Mauryan periods.

For example on Plate XI, (N.S., No. XLV) coins 22, 23 and 24 belong to the same class marked as 13A, the first 4 symbols in the groups are common on the 3 coins; the 5th symbol on coin No. 24, which is a conventional form of a tree is seen as the 4th figure of the group on coin No. 25, this alteration changes the series, and therefore to differentiate them they are sub-classed as 13A and 13B, forming two different series of class 13.¹

Another example out of the pre-Mauryan coins can be cited. Coins illustrated on Pls. XIV and XV (N.S., No. XLV) from Nos. 53 to 65 of class 29A, bear the 1st 4 symbols common to them all, with various symbols as their 5th in the groups. Coin No. 65 has a caduceus as its 5th symbol, this symbol takes the 4th place in the groups on coins 66 to 68 of class 29B, forming a new series. Thus No. 65 becomes the connecting link between the two series A and B of class 29, as illustrated on the plates.

Other similar examples can be cited from the Mauryan coins:—Coins illustrated on Pls. XVII to XX (N.S., No. XLV) from Nos. 93 to 105 of class 40A, on which the 1st four symbols are common, with various symbols as the 5th figures in the group; but on coin No. 105, the symbol of a peacock perched on a hill, occupies the 5th place, which appears as the 4th figure on coins 106 and 107 of class 40B, thus changing the series, it becomes the link between the two series 40A and 40B, as illustrated on the plate.

Similarly coin No. 121 of class 40E, which has its 5th symbol of a bull appears as the 4th figure on all the coins from Nos. 110 to 112 of class 40D, and thus stands a connecting link between the groups of two classes.

The coins on the plates in this instance were not properly arranged, the coins of class 40E Nos. 113 to 115 and 121 to 124 in which the coin No. 121 should have been the last, ought to have been placed prior to coins 110 to 112 of class 40D.

In the same way the coin No. 124 of class 40E having the 5th symbol of a panther following a dog is the connecting link between the series 121 to 124 of class 40E, and coins 125 to 127 of class 40H. Here again the 5th symbol appears as the 4th figure on all the 3 coins from 125 to 127 of class 40H, in the series.

Many other examples can be noticed in the illustrations of groups,—but it must be remembered that the list is not a com-

¹ Other coins of the sub-class 13B were secured which completed the series, after the publication of the article in Num. Suppl., No. XLV.

plete one, many more connecting links will be made out when other symbol groups are added in their proper places.

All the above mentioned instances indicate a methodical change of the last or the 5th symbol of one group to the fourth place in another group always keeping and indicating the connection of the series of one class with the series of another class.

This observed fact helped me much in the arrangements of the series of the different classes¹ of particular groups of 5 symbols in a partially chronological order. I however wish I could have arranged the symbol-groups and their sub-classes in a strictly chronological order, more carefully, than what has been done on the plates.

This methodical change in location of the 5th symbol may be due to the changes of kings in the same dynasty, and was the system adopted to preserve the distinctive dynastic symbol-groups on the punch-marked coins of all ages at the same time indicating the particular group-symbols of the particular kings in those early days when writing and dates were not put on the coins.

It cannot be pretended that the conclusions are final, but they appear to be the most natural deductions from the observed facts. The correctness or incorrectness of these will be proved or disproved by further observations and studies of the silver punch-marked coins of different periods and other new hoards. I have simply attempted to lay out the lines of thought on the observed facts to be tested by other numismatists who have the means of studying the punched coins.

The illustrated plates need revision with some corrections here and there in the arrangement of group figures, in a better chronological order by adding further symbol-groups which are not included in the illustrations, as more coins bearing different groups of the known classes have been seen by me after the publication of the previous thesis, and many more will be added in future.

PUNCHED COINS OF DIFFERENT STANDARD WEIGHTS.

As described in the previous pages silver punched coins of 2 different standard weights, with their multiples and fractions are now known, and excavated from several ancient sites.

Kautilya in his *Arthśāstra* has described the silver *Paṇa* of 32 Rattis weight, its half, a quarter and the eighth. These are commonly found and now identified. Cunningham in his *C.A.I.*

¹ In the 2nd columns of the plates, the Numerals represent the particular group-classes. The capital letters indicate the sub-classes of the same, and the small numbers added to the letters indicate the numbers of varieties in the series.

has illustrated a half-Paṇa with the Mauryan Chakra, Pl. I, fig. 17. I have one in my own cabinet,¹ but I have not so far seen any quarter-Paṇa of this period, which may be found one day.

The $\frac{1}{8}$ Paṇa is also known, there being 2 or 3 specimens in the Patna Museum, and 2 with Captain Martin, bearing the Mauryan Chakra,² each weighing somewhat less than 4 Rattis. The smallest coin of the series now known is $\frac{1}{16}$ th of a Paṇa, Sir J. Marshall has illustrated 14 such small coins out of 79 excavated from Taxila in the A.S.I. Report, 1924-25 all weighing below 2 Rattis with the Mauryan Chakra on one side.

Manu has also described the Dharāṇa (a weight for silver) and the Purāṇa (a silver coin) of 32 Rattis; a small silver coin of 2 Kṛṣṇaḥ or Rattis in weight is also mentioned, which he calls: 'Rūpya Māshaka'³ sixteen of which go to make a Purāṇa, the coin of 32 Rattis. The Rūpya Māshaka is so called as it was the *Māshaka*, made of silver; the usual Māshaka being the small *copper coin* of 5 Rattis. It is thus clear that Māshakas both of copper and silver were minted and known to Manu. The ratio of silver to copper was evidently 2 to 5 in early days about the 3rd and 2nd century B.C., as appears from Manu's description.⁴ Calculating on this basis, the silver Kārshāpaṇa of 32 Rattis would be equivalent to a copper Kārshāpaṇa, weighing 80 Rattis, both the coins are well known.

The absence of a silver Kārshāpaṇa of 80 Rattis was a stumbling block to several scholars before the discovery of the silver Māshakas, when neither the small coin was known, nor was Manu's description of weights and coins clearly understood. His Dharāṇa⁵ was a standard weight for weighing silver, but the word Purāṇa he used for a silver coin of the weight of 32 Rattis. Similarly his Raupya Māshaka was a small silver coin equal in value to the copper Māshaka—a coin of 5 Rattis. The term Kārshāpaṇa when used for a silver coin misled the previous scholars into the belief that it was also one of 80 Rattis, but the total absence of such a coin was a puzzle to them. Doctor D. R. Bhandarkar in his Carmichael lectures felt the same difficulty, as he knew that there existed no silver punched coin of 80 Rattis. It now appears that the silver Purāṇa or Paṇa was called Kārshāpaṇa, because it had the value of a copper Kārshāpaṇa of 80 Rattis. In our own days we call a 2-anna piece, a

¹ The coin is illustrated on Pl. II, Fig. 6 of this article.

² Fig. 28, Pl. XXVI, Num. Suppl., No. XLV.

³ The coin is illustrated on Pl. II, Fig. 8, of this article.

⁴ Manu Sanskrit Text, Ch. VIII, slokas 131 to 137; he mentions Rūpya Māshaka in sloka 135.

⁵ Kauṭilya has also used the term 'Dharāṇa' in the sense of a weight for weighing diamonds विंशतिपङ्कजम् वज्रधरणम् Text २ अथि. १८ अथा.

four-anna or an eight-anna piece of silver, all being based on the value of the copper denominations of the anna or $\frac{1}{16}$ th part of a rupee; the silver Kārshāpaṇa or Paṇa of 32 Rattis was equivalent to a Kārshāpaṇa of 80 Rattis of copper.

It is now well known that the silver punched coins of 32 Rattis were called by different names in different periods. Manu called them Purāṇas, while Kauṭilya designated them as Panas. Paṇa¹ was the name of the copper coin of 80 Rattis weight in the early days, but we know that the silver Paṇa of Kauṭilya was also of 32 Rattis²; here again the ratio of silver to copper was evidently as 2 to 5, as in the time of Manu later. Kauṭilya called the silver coins of 32 Rattis as 'Panas' because it was equal in value to the copper Paṇa of 80 Rattis, the common copper currency of early days.

Silver punched coins of 100 Rattis weight, and their fractions, in halves, quarters, eighths and sixteenths have been excavated now. The 33 bent-silver-bars bearing 2 symbols of the Bhir Mound hoard found with the coins of Alexander already described, are the coins of 100 Rattis weight, none weighing below 94 Rattis; their halves of 50 Rattis, quarters of 25 Rattis (the Pādas), eighths of $12\frac{1}{2}$ Rattis, and sixteenths of $6\frac{1}{4}$ Rattis bearing the same symbol, singly, as are seen on the bent bars (Śalākas) have been also excavated from the same Bhir mound one of the earliest site at Taxila, on different dates, which Sir J. Marshall thought to be the early local coins of Taxila. They are now kept in the Archaeological Museum at Taxila.

These coins are illustrated on *Pl. 11 of this art.* *Fig. 1* is a bent silver bar of 100 Rattis weight. Its actual weight is 179.4 grains or 99.6 Rattis,³ it is punched at the two ends on one side with a special type of Shadāra-Chakra, consisting of 6 Triśūlas (tridents) round a small cricle with a dot inside.⁴

Pl. 11, Fig. 2 of this art. is a half piece and was excavated from 6'-8" below the surface at Bhir mound, Taxila on 7th December, 1920; it weighs 63.6 grs. or 35.3 Rattis; as the coin is much corroded and chipped off it has lost about 14.7 Rattis in weight. The original weight would have been 50 Rattis.

Pl. 11, Fig. 3 of this art. is a quarter piece, excavated from 11'-8" below the surface, it weighs 35.4 grains or 19.6 Rattis, it bears the same symbol and has lost 5.4 Rattis of its original weight, it was excavated on 11th February, 1931.

Pl. 11, Fig. 4 of this art. is a one-eighth piece weighing 19.2 grains or 10.6 Rattis, excavated on 30th November 1920

¹ *Vide C.C.A.I., p. 59.*

² All the identified silver punched Mauryan coins are of 32 Rattis standard. No silver coin of 80 Rattis has ever come to light.

³ A Ratti is calculated to be 1.8 grains or very near it.

⁴ Sir J. Marshall has wrongly described this figure to be the cross-and-ball symbol.

from 3'-8" below the ground; it has lost 1.9 Rattis in weight, and bears the same symbol on one side.

Pl. 11, Fig. 5 of this art. is a one-sixteenth piece weighing 7.5 grains or 4.1 Rattis, having lost 2.1 Rattis, it was excavated on 3rd March 1920 from 2'-6" below the level.

More than a dozen stray coins of this series were found, and are now kept in the Archæological Museum at Taxila. No coins like these have ever been excavated from any other part of the country.

It is evident from these coins that in the kingdom of Gāndhāra the silver currency of a different standard weight of 100 Rattis with its fractions was prevalent, the coins are of much earlier date and were apparently current there before Alexander came to Taxila in 326 B.C.¹

Silver coins of 25 Rattis weight—the Pādas, have also been discovered from other ancient sites as already described, showing that in the early days before the rise of the Magadha Empire they were current in the independent kingdoms of the time of Buddha and before him.

Though there is no mention of the coins of 100 or 25 Rattis in Kauṭilya and Manu, yet we find that coins of such weights were known to the still earlier writers of the Aṭṭakathā and Śatapatha Brāhmaṇa referred to before, and it may not be wrong to infer that such coins were current in Buddha's days and even before him, i.e. so far back as the 8th century B.C.

THE RAKTIKA OR KRSHṆALA, THE ANCIENT INDIAN STANDARD WEIGHT.

It is an anthropological fact that all measures and weights and even the counting were learnt by man from natural objects and adapted to suit his purpose.

In India in the very early days, Abrus Picatorius the Kṛshṇala or Raktikā, which has the two names for its beautiful black and red colour, was used as a unit of weight along with the barely corn, paddy and mustard-seed. Its earliest mention is found in the Taittiriya Brahmana² of about 800 B.C.

Different definite weights which were multiples of the Raktikas or Rattis were fixed and adopted with particular names for weighing gold, copper, silver and precious stones; for instance a Māshaka which contained 5 Rattis was used for weighing gold, silver and copper; the Dharāṇa was a weight which contained 16 Māshakas used for weighing silver only; and for copper and gold, the Karsha and Suvarṇa of 80 Rattis were used. But there was a Dharāṇa of 20 rice weight for

¹ *Cambridge History of India*, Vol. I, pp. 368-374.

² Dr. Bhandarkar, Carmichael Lecturer, Calcutta University, 1921, p. 60, 'Krishnalam Krishnalam Vajasridbhyah prayachchhati (I, 3, 6. 7).

weighing diamonds as described by Kautilya¹ and Manu. But the question arises as to what was the actual weight of Kṛṣṇāla or Raktikā used in the time of Kautilya and before him.

The Kṛṣṇāla seeds are not of exactly the same size or weight ; they vary between 2.25 and 1.7 grains ; from a handful of seeds taken at random, the biggest ones weighed on the average a little over 2.25, the medium sized ones worked out at 1.875 grains, while the smaller seeds averaged 1.75 grain each. My observations on this point explain the prevalence of different Tola standards of weight still persisting.

The same question was examined by Thomas, Cunningham and other scholars but they arrived at different results. Thomas found a *Ratti* of old days to be equal to 1.83 grains, but Cunningham came to a figure of 1.8 grains, which I have found also to be the most appropriate mean weight ; the heaviest silver punch marked coin in mint-fresh condition which I have come across weighed 57.5 grains, which brings the *Ratti* to 1.8 grains, as already calculated by Cunningham, and every where in the article I have given the weight of coins in terms of *Rattis* on the basis of 1.8 grains to a *Ratti*.

In the early days the silver Paṇas or Purānas, which were of a Dharāṇa weight of 32 *Rattis*, weighed 57.6 grains, on account of the selection of seeds of 1.8 grains, which is the weight of the majority of seeds even now. It also appears that at some period and locality the *Raktika* of a slightly heavier weight was selected ; as I found in the case of the silver-punched coins of the Surasena Kingdom of Mathura, described before.

The same divergence of standard continued in the Muhammadan period and persists to the present day. The Tola as used by the goldsmiths and silversmiths of Benares at the present day contains 96 *Rattis*, but weighs 216 grains ; the *Ratti* here thus equals 2.25 grains. The Government standardized Tolā, the weight of a Rupee of 180 grains is also supposed to contain 96 *Rattis*, the standard *Ratti* thus coming to 1.875 grains. The Cawnpore goldsmiths' Tola on the other hand weighs 181.87 grains.

CONCLUSION.

In conclusion it can be said without exaggeration that though the study of silver punched-coins is probably the most difficult branch of Indian Numismatics, yet it is at the same time the most fascinating one.

The science of Numismatics merges here into Archæology and Anthropology. but there is a vast collection of antiquities

¹ विंशतितण्डुलं वज्रधरणम् ।

Arthśāstra 2 Adhi. 18 Adhyāya, 37 Prakaraṇa. (Manu, VIII, 132-136, Text).

and inscriptions in the various Indian Museums accessible to every scholar, awaiting the careful study of the symbols and figures engraved on them, which are similar to those seen on the punched-coins, and which would in many cases help to check the chronological data of the coins.

The attention of the scholars and Numismatists is drawn towards it, as the researches in this unexplored line are expected to be most useful from the historical point of view by which the real, and the noblest purpose of the Indian Numismatics will be served.

DURGĀ PRASĀD.

Benares,

10th Dec., 1934.

Note :—On page 8 of my article on ‘Classification and Significance of the symbols on the silver punch-marked coins of Ancient India’ published in the Numismatic Supplement, No. XLV for 1934, and in the *Journal and Proceedings of the Asiatic Society of Bengal*, Vol. XXX, No. 3, 1934, I have stated, that, out of the 564 symbols illustrated on Plates XXII to XXVII, and Pl. XXXII, only half a dozen symbols are doubtful and a few are incomplete, and wanting.

I take this opportunity now to correct and complete the doubtful symbols, already illustrated there ; and add the missing ones, which I have found out from better specimen of coins.

On Plate X of the said previous article,¹ coin No. 19, the 5th symbol in the group, illustrated in the 3rd column, was incompletely drawn,—it should be like *Fig. 1 of Pl. 11 of this article*.

On the same plate, coin No. 20, the 4th symbol in the group could not be drawn, as it was very doubtful owing to superimposition of symbols. It is like *Fig. 2 of Pl. 11 of this article*.

On Plate XI, coin No. 23, the 5th symbol of the group is a bare branch of a tree, drawn incompletely; it has a railing below it, like the *Fig. 3 of Pl. 11 of this article*.

On Plate XII, coin No. 35, the 4th symbol of the group was missing,—it is like the *Fig. 4, of Pl. 11 of this article*, and should be added there.

On Plate XII, coin No. 37, the 4th symbol in the group which is a tree growing on a hill is not correct, it should be the same tree, but without a hill, like *Fig. 5 of Pl. 11 of this article*.

Similarly the 5th symbol on coin No. 59, Pl. XIV, should be without a hill, as stated above.

On Plate XIII, coin No. 52, the 2nd and 3rd symbols were drawn inaccurately, they are like the symbols *Figs. 6 and 7 of Pl. 11 of this article* respectively. Fig. 6 is a new type of

¹ Published in the Numismatic Supplement No. XLV for 1934 and in the *Journal and Proceedings of the Asiatic Society of Bengal*, Vol. XXX, No. 3, 1934.

Sadar Chakra, and Fig. 7 is a triscales, with 3 Nandipadas in its arms, the group should be corrected accordingly.

On Plate XV, coin No. 67, and Plate XXI, coin No. 69/141, the 5th symbols in the groups were not drawn completely; they should be like the *Fig. 8 of Pl. 11 of this article*.

On the same Plate No. XV, coin Nos. 67, 68, 69 and 69/141, the 2nd symbols of the groups should be corrected according to the *Fig. 9 of Pl. II of this article*, which is a Sadár Chakra with Damarus in place of Nandipadas in the 2 ovals.

On Plate XVII, coin No. 95, the 5th symbol of the group in the 3rd column, was not correctly drawn, the symbol was disfigured badly owing to the flattening of the symbols, and appeared like a pillar, but it is actually a human figure with a stick in hand, like *Fig. 10 of Pl. 11 of this article*.

On Pl. XXI, coin No. 143/131, the 5th symbol is missing—it is a bull, like *Fig. 11 of Pl. 11 of this article*, and should be added there.

As all these symbols are also illustrated separately on Plates XXVI and XXVII, they should be corrected and added as well on these 2 plates.

Fig. 42a, on Plate XXVI, should be amended.

Fig. 75, Fig. 89, Fig. 112 and Fig. 119 of Pl. XXVII, should also be corrected accordingly and their descriptions changed.

*

* *

A corrigenda on the next leaf is also printed for the correction of misprints in the previous article published in the Numismatic Supplement No. XLV for 1934, and the *Journal and Proceedings of the Asiatic Society of Bengal*, Vol. XXX, No. 3, 1934.

Corrections should be made there, and I think I owe an apology for my inability to do the correction then, before the publication of the article.

CORRIGENDA

For the article '*Classification and Significance of the Symbols on the Silver Punch-marked Coins of Ancient India*,' published in the *Numismatic Supplement No. XLV* for 1934, and in the *Journ. Proc. Asiat. Soc. Bengal, (N.S.), Vol. XXX, 1934, No. 3.*

Please make corrections before reading there.

- Page 5 line 21, *read* a century and a quarter *after* *for* a century after.
- „ 18 line 18, *read* vide Pl. I *for* vide Pl. II.
- „ 21 line 2, *add* 5th Fig. *in the end of the line.*
- „ „ line 3, *add* Ob. 5th Fig. *after* Pl. IV.
- „ „ line 6, *add* 5th Fig. *after* Pl. II.
- „ „ line 12, *add* 1st Fig. *after* 105.
- „ 22 line 18, *delete* and Pl. IV, Re of 43.
- „ „ line 22, *read* 12 curved *for* 16 curved.
- „ 23 line 20, *add* 2nd Figs. *after* 11 and 12.
- „ „ line 23, *read* Pls. I to III *for* Pls. I and II.
- „ „ line 38, *add* and 4 *after* Coin 1.
- „ 24 line 15, *add* Reverse symbol *after* No. 98.
- „ „ line 31, *add* 5th Fig. *after* coin 19.
- „ 26 line 19, *add* See Pl. IV, Ob. of 57, 4th Fig. *after* Pl. XLI.
- „ „ line 21, *read* 12 rays *for* 9 rays *and read* Fig. 10 *for* Fig. 11.
- „ 27 line 30, *read* Pl. II *for* Pl. III.
- „ 29 line 27, *read* Astára *for* Ahtara.
- „ 33 line 6, *read* Yoni *for* Eye.
- „ „ line 20, *read* First column *for* second column.
- „ 35 line 12, *read* 3rd Figs. *for* 4th Figs. *and add* Figs. *before* 98.
- „ „ line 13, *add* Pl. V *after* 100.
- „ 37 line 30, *delete* to XV *after* Pl. IX *and read* 1 to 8 *for* 1 to 69.
- „ „ line 39, *read* coin 8 and 8A *for* coin 10.
- „ 38 line 18, *read* 2 arrowheads *for* 42 arrow heads.
- „ „ line 22, *delete* See Pl. X.
- „ „ line 23, *delete the whole line* Ob. of Coin 21, 2nd Fig.
- „ „ line 37, *delete* and XII.
- „ „ line 38, *delete* and 31, *after* 30.
- „ 39 line 2, *delete* and XIII.
- „ „ line 7, *delete* Ghata, pitchers or,
- „ 42 line 7, *read* a M over its back *for* a M 4 back.
- „ 43 line 46, *read* coin 1 *for* coin 3.
- „ 47 line 5, *read* coin 8 *for* coin 10.

Page 50 line 2, *read* 7 and 10, 5th Figs. *for* 7 and 8, 4th Figs.

„ „ line 49, *read* coin 2, 4th Fig. *for* coin 2, 3rd Fig.

„ 51 line 20, *delete* and *from the end of the line*.

„ „ line 21, *delete* Pl. XXI, coin 142.

„ 53 line 28, *read* blunt *for* blund.

„ 56 line 23, *read* other coins are found *for* coins there are other coins found.

„ „ line 24, *add* which *after* above.

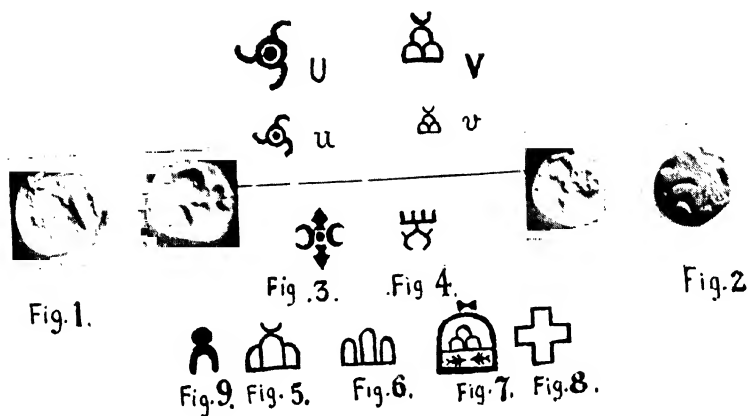
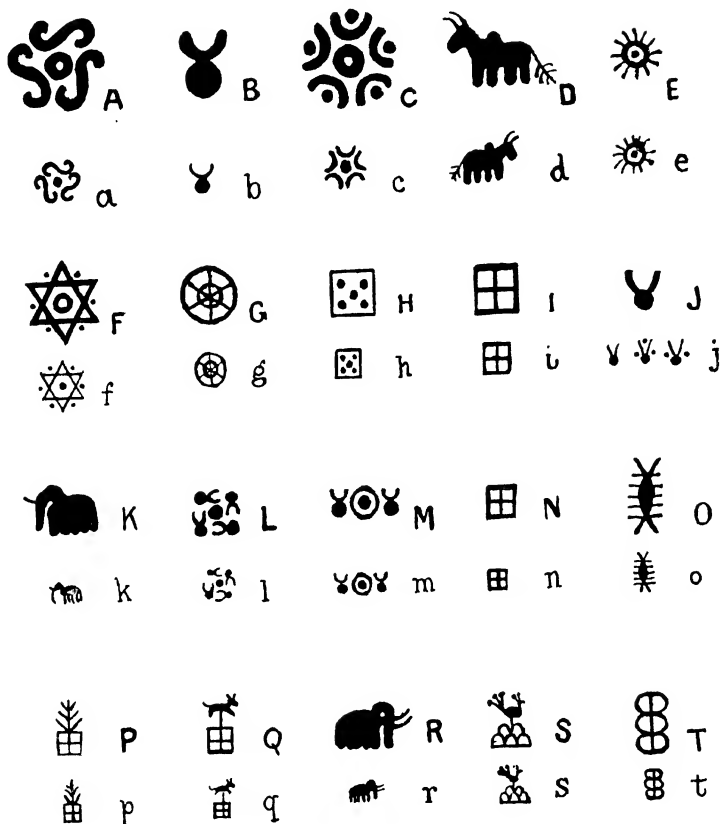
„ „ line 25, *read* and in majority are *for* are in majority.

Plate V, No. 100, in column 2 *read* 3C1 *for* 3B2.

Plate X, No. 16, in 6th column *add* C.C.I.M. *after* V. Smith and *delete* C.A.I., Pl. 1-8 of 22nd line.

Plate XXIV—*add a note that* Figs. 198 to 244 *are seen on the Reverse of Sauraseni Coins of Mathura illustrated on Plate XXXI.*

NOTE :—*Read* Captain Martin *for* Mr. Martin *wherever it occurs in column 6 on the Plates.*



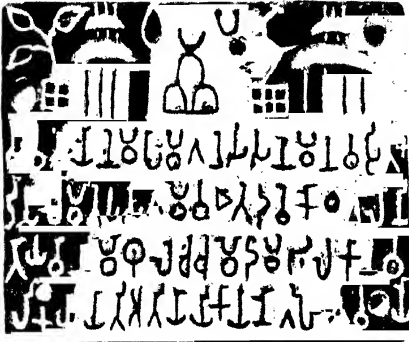


FIG. 1. Sohgaura Copperplate.



FIG. 3.

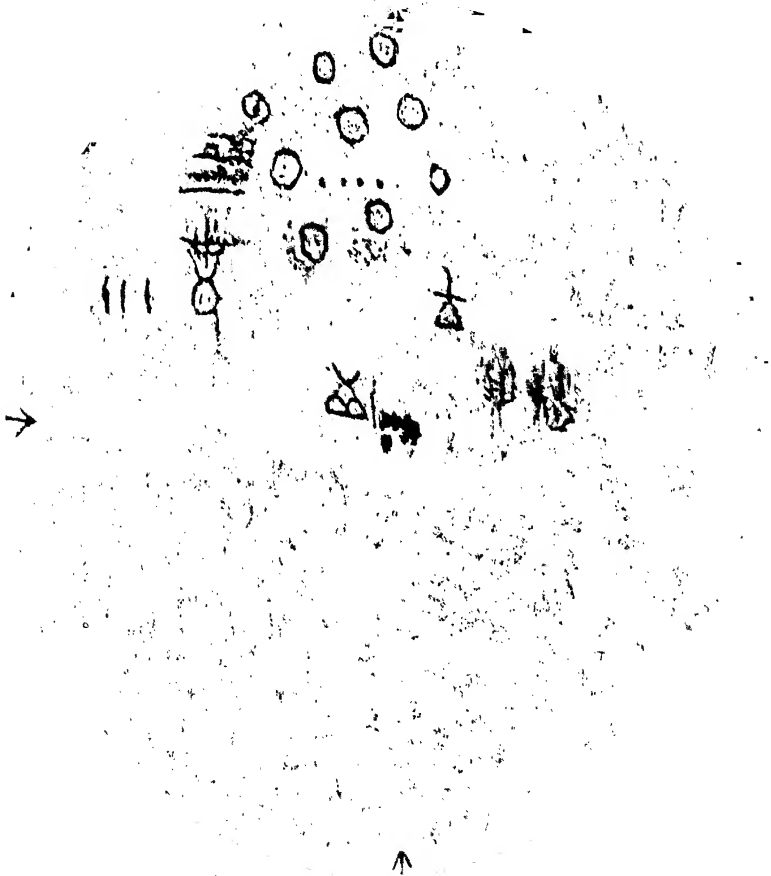


FIG. 2. Base of Kumrahar pillar.

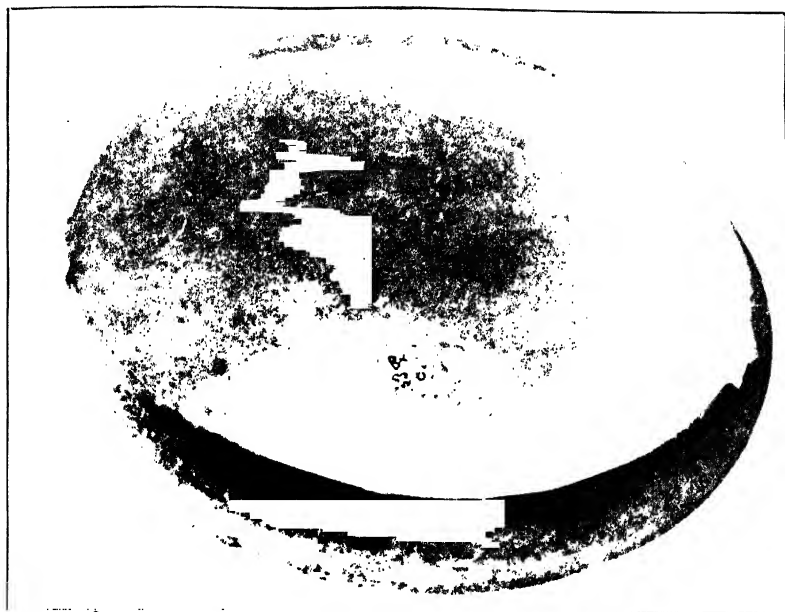


FIG. 1.



FIG. 2.



FIG. 3.

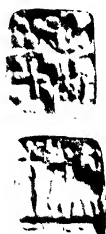


FIG. 4.

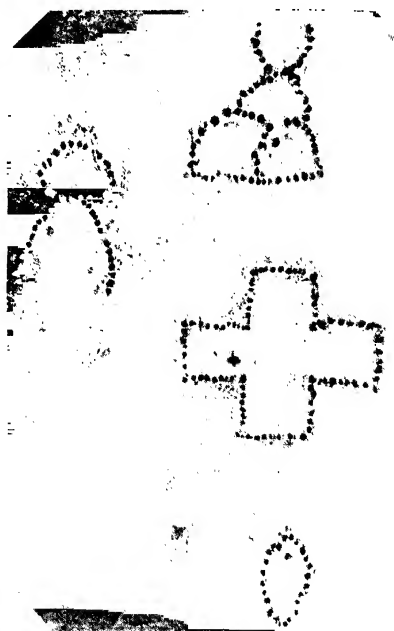
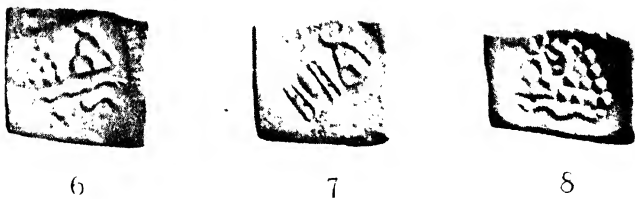
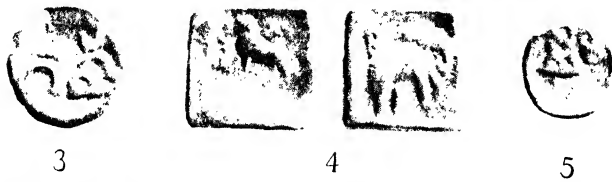
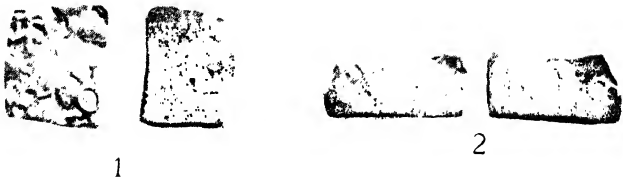


FIG. 5.





1



2



3



4



5



6



7



8



9



10



11



10



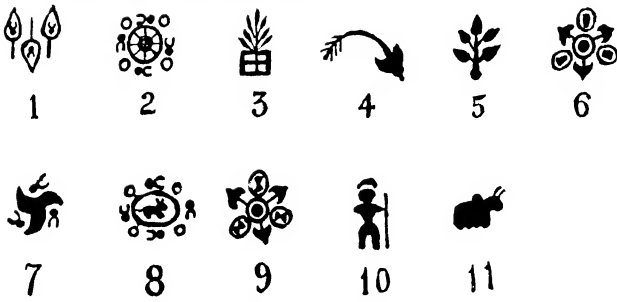
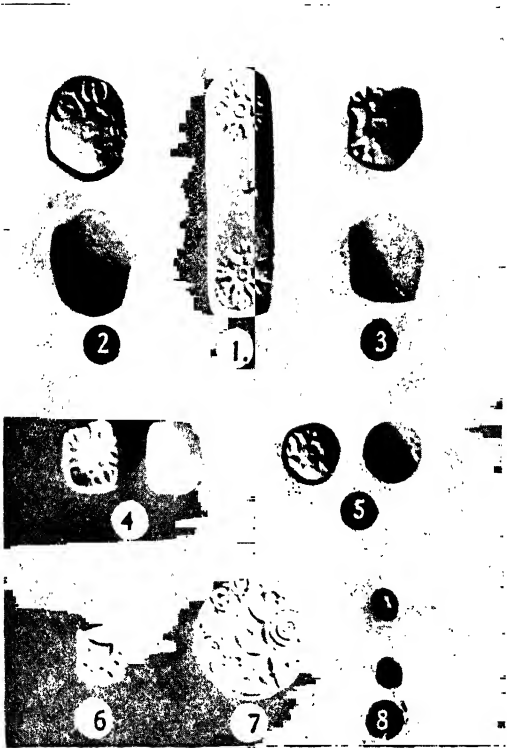
12



13



12



Corrected Symbols.

344. A NEW ANDHRA COIN.

This coin was among the coins collected at Balpur, near Chandrapur in Bilaspur District of the Chhatisgarh Division of the Central Provinces by Pandit Lochan Prasad Pandeya, the enthusiastic Secretary of the Mahakosala Historical Society, to whose energy and keenness the recovery of so much historical material in this remote corner is due. The present coin is said to have been originally discovered in the sand of the Mahanadi river by persons washing the sand for gold. It is a unique coin in several respects and is valuable for the light it throws on the history and coinage of the Andhra period.

In the Purānic lists of Andhra Kings, there occurs a name which with slight variants may be taken as ¹Āpilaka with a reign-period of 12 years. Along with several other names of Āndhra Kings, known from the almost unanimous testimony of the Purānas, but not yet been confirmed by archæological evidence (e.g. Lambodara, Nemi Krishna, Pravillasena or Purindrasena) this king has not yet been recognized as historical and but for the present find would have long remained so. The authenticity of the Puranic tradition is thus strikingly confirmed but it is nevertheless true that the actual order in which the kings ruled as given in the Puranas cannot be followed.

In the present instance, the place of Āpilaka in the Purānas is almost immediately after Śātakarni, and thus comparatively early in the dynastic list. The present coin cannot however be ascribed to an early Āndhra ruler on numismatic grounds and must rather be classed with the eastern issues of later rulers like Śrī-Rudra and Śrī-Yajña Śātakarni and relegated to about the end of the second century A.D.

The elephant type of the coin of Āpilaka is quite distinct from the other types depicting this motif. The early lead, potin and copper coins of Malwa fabric, show the animal either standing or walking left or a small figure standing right. The nearest approximation in style to the present elephant is the figure on the round lead coins of Śrī-Yajña Śātakarni issued in Āndhra-deśa, (Rapson's *Cat.*, Pl. VII, 164) but in size, art and execution the present type is by far superior to the other. The other details such as the goad in front and the symbol above are also unique.

The only copper coins of the Āndhra dynasty are the rectangular Malwa pieces based on the ancient Karshapanas on


¹ Rapson : Catalogue of Andhra and W. Kshatrapa coins p. lxvi. The *Vāyu*, p. calls the king Apilavā, the *Matsya* Apilaka and the *Vishnu* Divilaka, while the *Brahmāṇḍa* correctly states the name as Āpilaka.

which the symbols and other motifs are obliquely impressed. In the localities nearest the provenance of the present coin, viz. Chanda on the one hand and the east coast districts on the other, either potin or lead exclusively held the field. It is therefore likely that Āpilaka must have followed some local prototype, in issuing his copper coins, although very few copper coins with a blank reverse have been so far found. The weight of the coin (65 grains) suggests a comparison only with Kushan copper coins, which at one time circulated throughout North India.

The legend in which the epithets *raño* and *Sivasirisa* appear before the king's name does not exactly correspond with that on any other Āndhra coin. The legend found on certain lead coins of Āndhra-desa (Rapson's *Cat.* page 29) reads *raño vāsithīputasa Sivasiri-Sātakamniśa*, which indicates a ruler by the name Sivasiri-Sātakamni, with the metronymic Vāsisthīputra. Āpilaka does not use any metronymic, but on the other hand the use of the genitive after *Sivasiri* on his coins shows that this was regarded as an epithet rather than part of his regular name, as in the case of Vāsisthīputra. The use of these epithets or *birudas* with *śrī* at the end seem to have been almost regular with the Āndhra kings and queens, such as Sakti-śrī, Veda-śrī, Bala-śrī, Yajña-śrī and the alternate form Śrī-Yajña in which the last name occurs renders it probable that such names as Śrī-Krishna, Śrī-Chandra and Śrī-Rudra may also have alternatives as Krishna-śrī, Chandra-śrī and Rudra-śrī. This may also explain why the king who calls himself siri-chada-sāti (Śrī-chandra-sāti) is known as Chandra-śrī Śātakarni to the Purānas.

The conclusion is thus irresistible that Sivaśrī Āpilaka was a scion of the Āndhra family, but had an independent principality at the north-easternmost limit of the Āndhra Empire over which he ruled sometime at the end of the second or beginning of the third century A.D.

Obverse : Elephant standing right,

In front, elephant-goad, above 

Legend around the edge of the coin, commencing IX, *rāño Sivasiris* = *Āpilakasa*.



Reverse : Blank.

Æ, size 1", weight 65 grains.

345. TWO NOTES, ON WESTERN KSHATRAPA COINS, AND
ON VALABHI COINS.

A. THREE HOARDS OF THE COINS OF THE WESTERN
KSHATRAPAS.

It is well known that the chronology of the Western Kshatrapas is fixed mainly on the strength of the comparatively large number of their coins, many of which bear dates while their inscriptions are indeed very rare. It becomes therefore necessary to study each new hoard in great detail and see if there is any possibility of fresh light being obtained on this otherwise dark period of Early Indian History.

Details about the coins of all the three new hoards have been collected and tabulated at the end of this paper for facility of reference. In the body of this paper I only wish to bring out the novel and interesting points about the coins in each of these hoards.

I. *Sonpur (Chhindwara) Hoard of 633 Coins.*



A big hoard of 670 silver Kshatrapa coins was found in 1925 by Surat Ahir and others at Mauza Sonpur in the tahsil and district of Chhindwara in Central Provinces. Out of these 37 coins were melted away by the finder for making ornaments and the remaining 633 were sent to me for detailed examination by my friend Mr. M. A. Suboor, coin expert of the Central Museum, Nagpur. On the strength of my recommendation the coins were distributed in 1927 to several museums in accordance with the procedure laid down for the distribution of Treasure Trove Coins.

Since the Western Kshatrapas are not known to have had any control at any time over Central Provinces, these coins could not ordinarily have been current in the district and the natural inference would be that some one must have acquired them from the Kshatrapa dominions and buried the treasure with the idea of removing it at a future date. The popularity of Kshatrapa coinage is testified by its find at several places far beyond their territory.


The treasure is thoroughly representative and contains coins of all kings from Rudrasena I (121s') to Swami Rudrasena III (300s') with the exception of Sanghadaman. More than half the number of coins belong to Visvasena (150), Rudrasena II (114) and Bhartridaman (110). Out of the whole lot only 200 coins are without date while the rest bear dates.

This hoard gives us several variants of the symbols or forms used for giving dates as also several new dates which are detailed below.

Coin No. 26.

(1) The horizontal stroke which cuts the ( like) form used for four is considerably curved down at both ends .

Coin No. 35.

(2) Sign for 60 has the horizontal stroke at right angles to the vertical body more towards the upper end and not towards the lower end as is usually the case .

Coin No. 507.


(3) In the coin of Rudrasimha II dated 227 the sign of 20 is just like an ellipse without any horizontal stroke or dot in the middle. O.

Coin No. 57.

(4) In this coin there is double 'ya' in the name of Vijaya^a sena.

The following new dates are known for the first time from this hoard :—

Dāmasena M.K. . .	..	..	1 (4) 7
Viradaman, K. . .	..	..	157
Rudrasena II M.K.	..	..	195
”	..	..	199
Bhartridaman M.K.	..	..	216
Swami Rudrasena III	..	..	284
”	..	..	28 (5)
”	..	..	287
”	..	..	301
”	..	..	(3) 12
”	..	..	31X

Usually on the reverse of these coins we find in the central portion the Sun, the Moon and the Chaitya or the Hill mark. I consider that the so-called Chaitya symbol  represent the

hill or the earth for the following reason. In stone or copper inscriptions recording grants, it is generally recorded by the donor that his gift may be as permanent as or may last as long as the Moon, the Sun, the Ocean, the Earth and the River would last (Ā chandrārkkārṇava-Kshiti-Sarit-Samakālinam). Almost

all these signs, viz. the Crescent representing the Moon, the cluster of small sphere surrounded by eight rays on all sides in the earlier coins and the cluster of eight dots in the later coins representing the Sun, the Chaitya representing the earth or the mountain and the wavy line below that symbol representing the river are impressed also on these coins with a view to give them the same permanency.

In some of the coins of this hoard, we observe some new signs which may be described as under :—

Crescent (a) one crescent, (b) two crescents one over the other, (c) crescent in a circle.

Cross (a) Cross in a circle, and (b) cross in a square.

Square (a) cluster of three squares, or (b) four squares.

Circle with a thick bar bisecting it diameter-wise.

Cylinder with the vertical lines bending inwards towards the middle making it look like a Damaru.

It is not possible to surmise anything about these signs without comparing them with fresh signs which may be detailed in other Kshatrapa coins.

II. The Junagad Hoard of 520 Coins.

The second hoard of 520 coins has been lying for some time in the Junagad State treasury but unfortunately there is no record about its provenance and date of discovery.

This and the following hoards were originally examined by Mr. A. S. Gadre, the Curator of the Watson Museum of Antiquities at Rajkot, but were kindly sent to me by the Diwan Saheb of Junagad for re-examination at my request. Later on two more lots of 209 and 77 Kshatrapa Coins lying in the Bahadurkhanji Museum at Junagad were sent to me to facilitate the selection of coins for the said Museum from both these hoards at the time of distribution. In the first lot of 209 coins there were 134 coins of Swami Rudrasena III and with the following new dates :

Swami, Rudrasena III. Dates 282^N, 287, 288, 290, 291, 296, 29(7).

The present hoard of 520 coins has as many as 286 coins of Bhartridāman and as there are no coins of any subsequent ruler it may be inferred that the hoard must have been buried during the time of that ruler, i.e. towards the end of the third century A.D. The following new dates are obtained, of which the last is important :—

Rudrasimha I. 117.

Rudrasena II. 19(6) or (7), (19)7.

Viśvasimha M.K. 211.

Coins of Bhartridaman as M.K. dated 211 are known but with the help of this coin of Visvasimha as M.K. dated 211 it can be asserted that Bhartridaman must have become Maha Kshatrapa during the year 211 in succession to Visvasimha who held that designation in the earlier part of the year.

III. Hoard of 591 Coins from Vasoj.

This hoard was recently found at village Vasoj in the Unā mahal of Junagad State not far distant from Diu. It is quite representative and includes coins of most rulers from Rudrasimha I down to Swāmi Rudrasena III. Coins of early rulers up to Dāmajadaśri III are very few in number, while of the next four rulers there are as many as 163. Lastly Rudrasena III alone is represented by 370 coins.

The new dates supplied by this hoard are detailed below. Besides these there are several dates which are known from this as well as in other hoards described above but those have been omitted. There are two coins of Bhartridāman dated 215 and 216 but a coin with the former date was noticed in the Sarvāṇia hoard and the latter date is known from a coin in the Sonpur hoard described above.

Rudrasimha I	..	..	119 (Last known year of the ruler. Succeeded by Jivadāman during the same year).
Rudrasena I	..	..	127
Viradāman	..	..	16(1)
Viśvasena	..	..	22(2) or (7)
Rudrasena III	..	..	28(5)

About the coin of Viradāman with date 16(1) Rapson also suspected the unit figure to be 1 in the coins Nos. 455 and 457 of his Catalogue of British Museum Coins. Coins of Rudrasena III, dated 287 and 288, are not noticed anywhere but are described above as existing in the Junagad Museum collection.

The coins in the last two hoards are being distributed by the Diwan Saheb, Junagad State, to various museums in accordance with the Treasure Trove Distribution list for British India.

Names of Princes.	Sonpur (C.P.) Hoard.		Junagad 1st lot of 520.		Vasoj Hoard.	
	Dated.	Un-dated.	Dated.	Un-dated.	Dated.	Un-dated.
Rudradāman	..	..	..	3		
Dāmajadaśrī I	..	..	..	1		
Jivadāman ..	..	..	..	..	..	..
Rudrasimha I	..	..	3	2	1	
Satyadāman	..	..	..	..	..	..
Rudrasena I	1	..	5	3	2	..
Prithivisena ..	..	..	..	..	..	..
Sanghadāman	..	..	..	..	..	..
Dāmasena ..	4	4	1	2	1	1
Dāmajadaśrī II	1	..	..	..	..	2
Ishvaradatta	2	..	..	..	..	..
Viradāman ..	9	4	6	3	3	1
Yaśodāman I	2	..	1	1	..	..
Vijayasena ..	54	9	24	10	6	2
Dāmājadaśrī III	10	4	6	3	1	1
Rudrasena II	80	35	46	40	11	26
Visvasimha ..	9	20	12	44	1	12
Bhartridaman	61	49	44	242	7	62
Vjvasena ..	88	62	..	..	12	32
Rudrasimha II	24	16	..	..	2	8
Yaśodāman II	24	8	..	..	7	11
Swāmi Rudrasena III ..	3	..	..	..	162	208
Unassignable	1	49	..	18	..	9
TOTAL ..	373	260	148	372	216	375

B. LEGEND ON VALABHI COINS.

Several attempts have been made till now by various scholars to correctly read and translate the legend on the coins known as Valabhi Coins.¹ The final word has not yet been said on the subject. Rev. Father H. Heras, S.J., of St. Xavier's College sent me a large collection of about 200 of these coins for examination. All these are well preserved and bear the identical legend in the same style of writing. This prompted

¹ A.D. 1835, *J.B.A.S.*, Vol. IV, p. 687, J. Princeps.

A.D. 1850, *J.R.A.S.*, Vol. XII, p. 64, E. Thomas.

A.D. 1855, *J.B.A.S.*, Vol. XXIV, E. Thomas.

A.D. 1861, *J.B.B.R.A.S.*, Vol. VI p. XXXIX, Shastri Vinayak.

A.D. 1862, *J.B.B.R.A.S.*, Vol. VII, p. 14, Newton.

A.D. 1879, *Report of the Archaeological Survey of India*, Vol. IX, p. 28, Cunningham.

A.D. 1893, *Coins of Medieval India*, Pl. I, 17, Cunningham.

me to make one more attempt to offer a plausible reading of the legend on these coins, as well as a few remarks by way of interpreting the legend on a systematic and palæographic basis. I also examined a few more coins from the cabinet of the Prince of Wales Museum and noticed that there were two distinct types of these coins. The coins of the first variety resemble the Kshatrapa coins, as regard the shape and size as also the form of the letters inscribed on them. The major portion of the legend is still undecipherable, but it undoubtedly begin with the letters 'Rajña mahā-Kshatrapa' which are found only on Western Kshatrapa coins. The coins of the other type are more like the dumpy and irregularly shaped coins of the later Gupta period. It appears, therefore, that the Valabhi coins were first minted as a local issue in the time of the later Kshatrapas (about the end of the 4th century A.D.) and were current till the middle of the 5th century A.D., when the rulers of the Valabhi dynasty appropriated them as their own currency with necessary modification in the legend, shape and size. The first and the earlier type of coin is .6" in diameter and weighs 27 grains, while that of the later type is .45" in diameter and weighs 29 grains. Besides in the former the lower part of the trident is like a simple perpendicular rod while in the latter there is something like an axe at right angles to it.¹ In both the types there is the head of the king to right on the obverse and on the reverse the trident surrounded by the legend which begins from the figure I of the clock.

The letters are evenly distributed and there is no vacant space anywhere. Some coins bear the complete legend but the top and bottom strokes are not complete. For this reason I selected different lots of coins, for different parts of the legend on those coins. I give below a copy of the legend as reconstructed from several such coins. Legend on the first variety :—

ገዢዎችና ባለቤቶች ለሰው ጥበብ ማሳደግ ይረዳቸዋል።

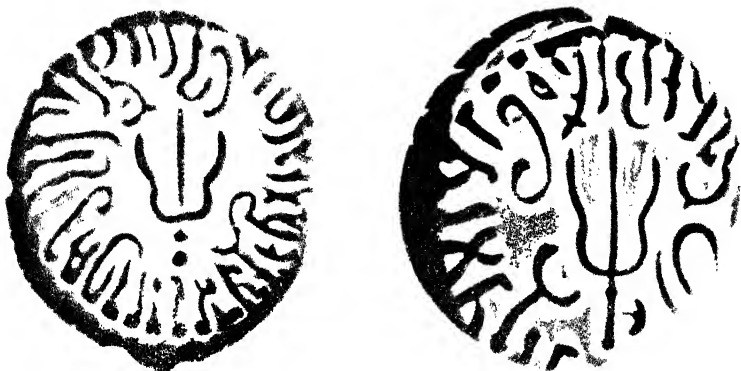
Legend on the second variety :—

ጋዲያን፣ ለዚህ ጉዳይ ማጠቃለያ ማድረግ፡ ምስክርነቱን

¹ This can be construed as an attempt to please the Vaishnavites by adding the representation of *paraś'u* (axe) the weapon of Paras'urama, one of the incarnations of Vishnu, to the Trident, the symbol of Siva. (I do not consider this as a plausible explanation—Ed.)

Interpretation or decipherment :—

Cunningham in his article on these coins in *Archæological*



Survey Reports, Vol. IX, p. 28, has given two different readings as follow :—

- (1) Maha Rajno maha Kshatrapa parama samanta maha sri Bhattarakasa.
- (2) Rajno maha Kshatrapa paramaditya Rajno samanta maha sri Bhattarakasa.

Both these readings end with the words 'Bhāṭṭarakasa'. Similarly in the legend as copied by me from the present lot of coins the last four letters can be read as 'ṭṭarakasa' which is the final portion of the name of senapati Bhattarakasa, the founder of the Valabhi dynasty as is ascertained from the numerous Valabhi copper plates known to us. After correctly interpreting this part of the legend, I proceed to decipher the remaining part not on conjectural or plausible grounds but on purely palæographic basis.

The 1st, 4th, 13th, 15th and 18th are exactly like the regular Brahmi 'ra' of the period and similar to the 20th letter which is 'ra' of Bhattarakasa. These all, therefore, have to be read as 'ra'.

Similarly the 3rd, 8th, 11th and 14th letters are very much alike the last letter 22nd which has been read as 'sa'. These letters are like 'Pra' of the Brahmi alphabets. But the Brahmi 'sa' in Gupta coins can easily assume this form by the shifting of the lower stroke little to the right.

The remaining letters are now discussed individually in the regular order. The 2nd letter has been read till now as jñio firstly because in the first type the letter is clearly inscribed as such and secondly because the 5th and 6th letters which are

very similar to those on the Kshatrapa coins can be read as 'Ksha' and 'tra'. For that very reason the 3rd and 4th letters have been read as 'ma' and 'hā' which would give the complete phrase *Rājno mahā-Kshatrapa*. The upper portion however of the 2nd letter is like the upper portion of 'sa' in the legend and the lower part is also similar to 'ta' in Bhāṭṭarakasa. The stroke of 'ra' is also found at the lower end of 'ta' and hence I would read the letter as 'stra' probably written incorrectly for 'shṭra'. The 1st and 2nd letters will thus give the word *rāshṭra*—meaning Kingdom.

The 5th and 6th letters have to be read as 'Ksha' and 'tra' though in 'tra' the upper curved stroke is missing.

The 7th letter can be compared with the letters 'para' as part of the legend 'Parama Bhāgavata' found on Gupta coins. There in the letters 'pa' and 'ra' written very near each other seem almost of the shape of three vertical parallel strokes with one horizontal stroke below. Both these letters seem to have been taken as 'Pa' only and the whole sign has been put here as representing 'pa'.

The 9th letter is also similar to the 7th with the exception of the horizontal stroke at the bottom.

The 10th letter is clearly 'Ku' as can be seen by comparing it with the same letter in the coins of Kumaragupta. The sign of 'U' appears like a comma which is the regular sign of the later period in several coins of Kumaragupta but in some of them we find it exactly as it is given here. This second form resembles more the sign of long 'U' of the later period.

The 12th letter is clearly the 'ma' of the Gupta period though because of the absence of the horizontal stroke at the bottom it resembles more the 'ma' of the Kshatrapa period.

The 16th letter can be read as 'śrih'. It has some resemblance also with 'tra' but clear vertical stroke at the top of the curvature and two dots one over the other after the letter to serve as Visarga leaves no doubt as to the correct reading of the letter. It compares very favourably with 'Śrih' of the Gupta coins though the horizontal stroke inside the curvature is here missing.

The 17th, i.e. the last individual letter to be assigned is the most important but at the same time most difficult to be read. It just precedes the letters 'ṭṭarakasa' and one is tempted with all possible stretch of imagination to read it as 'Bha' to get the name of the real historical and fitting founder of this dynasty namely Bhattarakasa. Here however is an attempt pledged to be based solely on palæographic grounds and one has to make the most of the similarity which can be traced with some of the known letters of that period. 'Bha' of the Asokan, Kshatrapa and Gupta period has nothing in common with this letter and has to be left completely out of consideration. The letter has the greatest resemblance with either 'Pta' of Gupta or 'Pra'

of Prakashaditya. 'Pu' of Puragupta is quite vertical, has no turn to the left and hence cannot claim any consideration. I would prefer to read it as 'Pra' as in 'Pta' the curvature is with its ends downwards. The legend, therefore, as construed reads 'Rashtira sara Kshatrapasa Ku samara sara 'shrih Prarattarakasa'.

This attempt at interpreting the legend as copied from the coins of the later type does not lead us any way nearer to the solution of this problem.

My friend Pandit Ratilal M. Antāni of Udaipur sent me some silver coins of this type two of which are illustrated here. One of these seems to be of the earliest period and offers a clue to correct reading of the legend.

As Valabhi coins were minted with the designs obtainable in later Kshatrapa and Gupta coins, clue for deciphering the legend on them, should also be obtained from these as well as other contemporary coins known to have existed in the province. The legend on Kshatrapa coins is from beginning to the end of a uniform type beginning with the title Rājno Mahākshatrapa and ending with the names of the father and the son. In silver and copper coins of the Gupta princes the name of the king is preceded by the epithet Parama Bhāgavata Mahārājādhirājaśri. On the coins of the Rāshtrakuta King Krishnarāja the legend gives Parama Māheshwara Mātā pitro pādānudhyāta as the epithet of Krishnarāja.

Now on the coin above referred to the legend begins at XI and can be positively read as follows Rājno Mahākshatrapa . . . [Dhara]-nu Dhyāta[ku] samara saha Śri Śarvva Bhattārakasa (sya).

The legend can be translated thus :—

This is coin of the illustrious Śaiva Bhattāraka who meditated on the feet of King Mahākshatrapa and who was his associate in the battlefield.

G. V. ACHARYA.

346. THE ATTRIBUTION OF THE CHANDRAGUPTA-KUMĀRADEVĪ TYPE.

One of the most interesting type of coins issued in the Gupta period is undoubtedly the one, which has on the obverse the figures and names of Chandragupta and Kumāradevī and on the reverse a goddess seated on a lion along with the legend *Lichchhavayah*. Early numismatists attributed these coins to Chandragupta I, who was assumed to have issued them jointly with the Lichchhavis and their princess Kumāradevī, who was his consort.¹ Mr. Allan has, however, dissented from this view in his Catalogue² and maintained that they were issued by Samudragupta in commemoration of his father and his own Lichchhavi descent. In this paper it is proposed to examine how far this view is correct.

Mr. Allan maintains that the type of Kushāna coins, which the Guptas obviously copied, did not circulate in the Gupta kingdom over which Chandragupta was ruling, and therefore 'we must place the origin of the Gupta coinage in a period when the Guptas had come into closer contact with the late Great Kushānas whose eastern (Panjab) coinage they copy; what historical knowledge we possess points to this period being, not in the reign of Chandragupta I, but in that of Samudragupta to whom the Shāhis, Shāhānushāhis and Śakas surrendered the enjoyment of their territories and the numismatic evidence quite supports this'.³

To judge from the analogy offered by the so-called Puri Kushan coins, this argument is not convincing. A large number of copper coins in Orissa belonging to the 6th or 7th century A.D. have been discovered closely imitating the common Kushāna copper type, *obv.* king standing, and *rev.* some deity. At first these coins were found only in Puri and Ganjam districts and were therefore taken to have been brought with them by pilgrims.⁴ Recently, however, these coins have been found practically throughout Orissa and Chhota Nagpur, viz. in the districts of Ranchi, Singhbhum, and Balasore⁵ and in Mayurbhanj State.⁶ On some of the coins found in the Ranchi and Singhbhum districts, the legend *ṭaṅka* is written in the 7th century characters. Rapson's view that these coins were like *Rāmaṭaṅkas* intended to be mere temple offerings and that they belonged to the latter

¹ Smith, *Early History of India*, 4th Edition, p. 296.

² *Catalogue of Indian Coins, Gupta dynasties*, pp. lxiv-lxviii.

³ *Ibid.*, p. lxvi.

⁴ Rapson, *Indian coins*, p. 13.

⁵ *J.B.O.R.S.*, 1919, p. 73.

⁶ *A.S.R.*, 1924-5, p. 38.

part of the Kushāna period¹ can no longer be supported. These coins were clearly the main currency throughout Orissa down to the 7th century A.D. We thus find that a coin type, closely imitating the Mihir type of Kanishka in copper, was being issued several centuries after the disappearance of the Kushāna power and in a province where Kushāna coins are not known to have circulated. If the Kushāna coinage was introduced in Orissa by pilgrims and merchants, it is clear that it soon became popular and the local governments and moneyers selected it as a model for their coinage, which was continued up to the 7th century A.D. We need not, therefore, necessarily place the beginnings of the Gupta coinage in the reign of Samudragupta, when the Gupta empire touched or partially included the territories in which the Kushāna coinage was then circulating. Before the Gupta period there does not seem to have been any regular gold coinage in Madhyadeśa. Traders and pilgrims from the Punjāb and Mathura visiting Benares, Allahabad, Gayā and Pātaliputra must have been bringing with them a number of the contemporary Kushāna gold coins for facilitating their transactions. Chandragupta I could therefore very well have selected this as the prototype of his own coinage, even when his dominions did not extend much beyond Allahabad.

The main reason why Mr. Allan regards these coins as medallies issued by Samudragupta is their originality in type as compared with the slavish imitation of the Kushāna prototype as seen in the Standard type of Samudragupta. 'How are we to account for his (Samudragupta's) return to a relatively slavish imitation of Kushāna types after the comparative originality of his father's coins?' asks Mr. Allan.² The question is not difficult to answer. Mr. Allan has himself observed that the Chandragupta-Kumāradevī type of coins is only one step further removed from its prototype than the Standard type of Samudragupta, viz., by the addition of the figure of the Queen on the obverse and the substitution of the lion for the throne on the reverse.³ This relative originality was, however, due not so much to the ingenuity or originality of the mint-masters as to the necessities of the political situation. It is admitted on all hands that the rise of the Gupta empire was to a great extent due to the matrimonial alliance of Chandragupta with the Lichchhavi princess Kumāradevī and the great accession of power and prestige which it brought to the Guptas. Samudragupta proudly mentions his descent from the Lichchhavi princess Kumāradevī, and his selection to the throne by his father was probably to a great extent due to his Lichchhavi descent. Some scholars have even gone to the

¹ Rapson, *Indian coins*, pp. 13-14.

² *Catalogue*, pp. lv-lvi.

³ *Ibid.*, p. lv.

extent of suggesting that the Lichchhavis themselves were ruling over Pāṭaliputra down to the beginning of the 4th century A.D., and that Chandragupta succeeded to the power previously held by his wife's relatives by means of his matrimonial alliance.¹ Whether such was the case or not, it is clear that Kumāradevi was a queen by her own right, and the proud Lichchhavis, to whose stock she belonged, must have been anxious to retain their individuality in the new imperial state. To take an analogy from English history, a section of the English Parliament was anxious that even if William III were given for the sake of administrative convenience the full powers of government, Mary should have the status not of the Queen consort but of the Queen reigning by her own right, and that her portrait should appear by her husband's side on the coinage. Similarly the Lichchhavis may have insisted that their own name and the figure of their princess, Queen Kumāradevi, should appear on the new imperial coinage, which Chandragupta thought of issuing on assuming the imperial title *Mahārājādhirāja*.² This peculiar political situation must indeed have been responsible for the addition of such features as the name and figure of Kumāradevi occurring on the obverse. Mr. Allan is surprised that Chandragupta should have been content to issue only a joint coinage throughout his comparatively long reign. The reason is obvious. He must have thought it diplomatically expedient not to offend the susceptibilities of the Lichchhavis by discontinuing the joint type. To revert to the English example, it may be noted that William III continued the joint type of coinage till the death of Queen Mary II in 1694, after which he issued for the first time coinage in his own name bearing only his own portrait. As coins of Chandragupta I bearing only his own name and figure are not found, we may perhaps conclude that Kumāradevi did not predecease her husband. It may be pointed out that Mr. Allan's view that Chandragupta I had a comparatively long reign does not appear to be justified, if he is referring to Chandragupta's reign as an emperor. Chandragupta must have thought of issuing coinage only in the latter part of his reign, when his position had become sufficiently strong and secure to justify his assuming the imperial title and starting a new era. Within less than 9 years after the last mentioned event, Samudragupta was already on the throne as is

¹ Smith, *Early History of India*, 4th edition, pp. 295-6.

² Mr. Allan observes that we need not necessarily assume that Chandragupta I struck coins on assuming the title *Mahārājādhirāja*, as some of the greatest Hindu sovereigns, e.g. Harshavardhana, do not appear to have struck coins at all (p. lxviii). It may be pointed out that we have now found several coins of Harsha; the coins of Śilāditya published by Sir R. Burn are undoubtedly to be attributed to that emperor as maintained by him. (J.R.A.S., 1906, pp. 843-850.)

proved by his Gaya copper plate.¹ It is therefore by no means certain that Chandragupta really ruled long after he had started an era and begun his coinage.

The original feature of the reverse of these coins consists merely in the substitution of a lion for the throne of the goddess. It may be pointed out here that goddess seated on the lion is not unknown to the Kushāna coinage. Nana appears as seated on a lion as early as the reign of Huvishka.² Recently Captain Martin has published a coin of the Late Kushāna King Kaneshko, where a goddess, whose name is unfortunately illegible, is shown as seated on a lion in the same way in which she does on the Chandragupta-Kumāradevi coins.³ The mint-masters of Chandragupta may well have taken the idea of representing the goddess as seated on the lion from this Kaneshko type.⁴ They may have modified the prevailing throne type by the substitution of the lion, as was the case with this recently published Kaneshko type, probably because Durgā, seated on her mount the lion, was the tutelary goddess of the Lichchhavis, whose name appears by her side. The presence of this legend *Lichchhavayah* can also be satisfactorily explained by the joint coinage theory. The Lichchhavis claimed to be equal partners with the Guptas in the new empire and so it was necessary to put their name on the reverse. This system of putting the name of an honoured ally on the reverse seems to have been suggested by the earlier practice of putting the name of the heir-apparent, viceroy or governor on the reverse, as seen in the case of the coins of Azes I. Azilises, Vonones, Gondopharnes, Hermæus, etc.

With reference to the reverse of these coins Mr. Allan observes that 'It is impossible that if the coin engravers had succeeded in evolving a type like the reverse of Pl. III, 14 or 15 (where the incongruous back of the throne is altogether eliminated), they would have reverted in Samudragupta's reign to reverses like Pl. I, 1-4,—Pl. IV, 1 etc. and begun the process of freeing the type from meaningless elements anew'. If this argument were faultless, we should expect that the mint masters having once succeeded in freeing the reverse from meaningless elements in Samudragupta's reign, the reverses like those on Pl. I, 1-4 should not reappear in later reigns. As it is we find that

¹ Even if we assume that this plate is spurious, it is clear that the forgery was committed not later than the 6th century A.D. The knowledge about the duration of the reign of Chandragupta I must have been fairly accurate at that time, and the forger is not likely to have committed any mistake in the dating of the plate.

² *Catalogue of the Coins in the Punjab Museum*, Vol. I, Pl. XX, x.

³ Numismatic Supplement for 1931-3, p. 7.

⁴ It is true that this type is at present rare, but we find cases of rare types being sometimes selected as prototypes. The copper coinage of Bhūmaka has for its prototype an obscure coin type issued jointly by Spalirises with Azes; see Rapson, *Catalogue of Andhra Coins*, p. cvii and Pl. IX, 237-242, and Punjab Museum Catalogue, Pl. XIV, No. 396.

Chandragupta II, the successor of Samudragupta, has also issued coins exactly similar in their reverse to the coins on Pl. I, 1-4 as will be clear from Mr. Allan's catalogue, Pl. VI, Nos. 1, 3 and 4. It is obvious that in spite of the originality exhibited by the mint-masters on some types, they did revert again to the Kushāna prototype as late as the reign of Chandragupta II. This may be due to local reasons, such as the partiality felt for the type in some areas, mostly in the northern parts of the Gupta empire.

We shall now consider the rest of Mr. Allan's arguments against assigning these coins to Chandragupta I. 'If Chandragupta I had issued coins, it would be remarkable' says Mr. Allan, 'that Samudragupta did not immediately continue their issue'. There is however no evidence to show that there was really a large interval between the coinage of Chandragupta I and that of Samudragupta. The legend—

Samaraśata-vitata-vijayo jita-ripur=ajito divam jayati

on the Standard type of Samudragupta's coins need not prove that they were issued towards the end of his reign after his northern and southern victories. Samudragupta was the right hand of his father and had distinguished himself on many a battle-field during the latter's lifetime; his selection as the Yuvarāja was largely due to his proved mettle. The legend *samaraśata*, etc. can very well refer to his victories won as Yuvarāja. It may be further pointed out that this legend on the Standard type of Samudragupta's coinage is the least bombastic and grandiloquent of his legends. The legends on his Battle-axe, Archer and Āśvamedha types :

Kṛitānta-paraśur=jayaty=ajita-rāja-jetā=jitaḥ (Battle-axe type)

Apratiratho vijitya kshitim sucharitair=divam jayati (Archer type)

Rājādhirājah prithivīm vijitya

divam jayaty=ahrita-vājimedhaḥ (Āśvamedha type)

undoubtedly put forward a greater claim for valour and achievements than the legend on the Standard type. The latter therefore was issued in the beginning of his reign, and the other types above referred to, later in his reign, when he had won fresh laurels in his northern and southern campaigns.

Mr. Allan thinks that the Lion-slayer type of Chandragupta II must have immediately succeeded the Chandragupta-Kumāradevī type, because both have on their reverse a goddess seated on the lion with a cornucopia in her hand. He says that this type is found on no other coins attributed to Samudragupta and it is unlikely that a type afterwards so popular should have been dropped throughout his long reign. It may be pointed out that this reverse type, a goddess seated on the lion, is not really very popular in succeeding reigns, it is confined only to the lion-

slayer types of Chandragupta II and Kumāragupta I, and it was obviously suggested there by the presence of the lion on the obverse.

The greatest objection to the Commemoration Medal theory of Mr. Allan is the absence of the name of the commemorator on these coins. In the realm of Ancient Indian Numismatics we have several examples of Commemorative Medals being struck by succeeding rulers, but there is not a single case so far known of a ruler commemorating his parents or predecessors, but failing to put his own name or *biruda* on the commemorative medals. Agathocles and Antimachos Theos have issued a number of commemorative medals commemorating Alexander the Great, Antiochus Nikator, Didotos, Euthedemos, Demetrios¹ etc. They no doubt give the names and portraits of the heroes they commemorate on the obverse in the place of honour, but they are very particular to add their own name on the reverse. Eukratides has also done the same on the commemorative medals issued by him in memory of his parents Heliocles and Laodike.² If Samudragupta had really issued the Chandragupta-Kumāradevī type of coins as commemorative medals, it was in the fitness of things that the names and figures of his parents should have appeared on the obverse in the place of honour; but his own name or at least his *biruda* should have figured on the reverse. Samudragupta in issuing these commemorative medals must have been anxious to proclaim the fact of his filial devotion; as it is, there is nothing whatever on these so-called medals to show who had issued them. The absence of the name or *biruda* of Samudragupta on these coins is in my opinion the most convincing proof that they were not at all issued by him.

Lastly, it may be pointed out that we have some undoubted cases of commemorative medals struck by Gupta emperors. These are the *Aśvamedha* coins of Samudragupta and Kumāragupta I, which were undoubtedly struck to commemorate the performances of the *Aśvamedha* sacrifice by these emperors. The legends on the reverse of these coins,

Aśvamedha-parākramah and
Aśvamedha-mahendrah

contain the significant *birudas parākrama* and *mahendra*, which at once enable us to conclude that they were issued by Samudragupta and Kumāragupta I respectively. If we are to assume that like the above *Aśvamedha* coins, the Chandragupta-Kumāradevī coins are also commemorative medals, it is indeed strange that Samudragupta should not have at least put his *biruda* on them, as he has done on his *Aśvamedha* coins.

¹ See Gardner, *Catalogue of Greek and Parthian Coins*, Pls. IV and XXX.

² *Cambridge History of India*, Vol. I, Pl. IV, No. 3.

It will be seen from the above discussion that the Chandragupta-Kumāradevī coins cannot be taken as commemorative medals struck by Samudragupta; they were undoubtedly issued by Chandragupta I himself in his own reign. He had owed his rise to the alliance with the Lichchhavis and his wife was a queen regnant; he had therefore to stick to this type throughout his reign, or at least during the lifetime of his wife Kumāradevī.

A. S. ALTEKAR.

347. THE RARE COPPER COINAGE OF KUMĀRAGUPTA I.

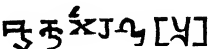
'The only copper coin that can with absolute certainty be ascribed to Kumāragupta I is in the Bodleian Library'. This interesting statement occurs in the British Museum Catalogue of Gupta Coins (B.M.C., p. xevii). As long ago as 1889 V. A. Smith made the same observation: 'Bodleian No. 751. Collected by Tregear, probably at Ajodhya. Unique . . . This is the only copper coin which we can affirm with certainty to have been struck as such by Kumāragupta' (V. A. Smith: The Coinage of the Early or Imperial Gupta Dynasty of Northern India, in J.R.A.S., 1889, p. 143). Tregear's collection was formed before 1848 and was acquired in that year by J. B. Elliot, who, eleven years later, presented it to the Bodleian Library. The discovery of a second specimen of a coin which had thus held the field as unique for the best part of a century is, therefore, of sufficient numismatic importance to be worth recording. This specimen, which is now in my cabinet, can, like the Bodleian coin, be ascribed with absolute certainty to Kumāragupta I; the obverse and reverse are almost identical, as will appear from the description given below, with that coin as listed and illustrated by Rapson in his 'Notes on Gupta Coins' (Num. Chron., 1891, Pl. II, 15).

Obv. : King standing l., wearing cloth and jewellery, with outstretched r. hand, probably holding a flower. and l. hand resting on hip.

[Allan thinks that the king is 'apparently throwing incense on an altar' (B.M.C., p. 113) but careful examination of my specimen leads me to make the alternate suggestion that he is holding a flower like his predecessor Chandragupta II on some of his copper coins.]

Rev. : Garuḍa with outstretched wings standing facing.

[I may mention here that the Garuḍa represented on the copper coins is really the Garuḍa *standard* of the Gupta dynasty represented in full on the gold Gupta coins. The pedestal of Garuḍa consisting of two parallel horizontal lines with cross vertical lines indicates that the whole is the top of the Garuḍa standard.]

Legend on rev. :  [५] (Śrī Kumāraguptaḥ).

Wt. : 27.3.

S. : 6

As regards the Bodleian coin the B.M. Catalogue informs us that its size is .7 but its weight is not given by either Rapson or Allan; the obverse is without any legend while on the reverse Kumāragu[ptah] is legible. My coin furnishes the honorific 'Śrī', which had already been read into the Bodleian coin by V. A. Smith, so that the complete legend is 'Śrī Kumāraguptah'.

The Bodleian and my coin now share the distinction of being the only known specimens of what the B.M.C. describes as 'Type I' of Kumāragupta's copper coinage and which it will be our endeavour to show here is the only type of Kumāragupta's copper coinage so far known.

The coin which Smith described as a copper coin of the 'Umbrella' type of Kumāragupta I (I.M.C., Vol. I, p. 116) is larger, thicker and heavier than the above described two coins and is probably a coin of Chandragupta II. Smith's reading of the legend on the reverse is conjectural as the coin is, as he himself admits, 'in very bad condition'. In 1889 Smith had written 'The existence of this type ('Umbrella' type) of Kumāragupta's coinage is perhaps doubtful, and rests on a single and very imperfect specimen ('The Coinage, etc.' p. 142). That specimen had belonged to Sir A. Cunningham. It is unfortunate that the Indian Museum coin is equally unsatisfactory.

Allan in the British Museum Catalogue has grouped together as 'Type II' three coins, one of which is in the Leningrad Collection, the second in the Indian Museum cabinet and the third was originally in Rawlins's collection. These three coins are so dissimilar to all known Gupta copper coins that they should be regarded rather as imitations of Gupta coins than as a genuine copper issue of Kumāragupta I. Owing to the debased style, Smith had at one time considered this type to belong to the Hūṇa series (J.R.A.S., 1907, p. 96) but later he ascribed the Indian Museum specimen to Kumāragupta II (I.M.C., Vol. I, p. 120). There are strong reasons why these coins should not be assigned to any Gupta emperor, whether Kumāragupta I or II. The gold, silver and copper coins of the Gupta emperors are distinguished for their generally high artistic merit in design and execution; whereas the present coins exhibit crude workmanship. Smith erroneously read 'Śrī To' for 'Śrī Ku' on Rawlins's coin, as Allan has pointed out, but the significant fact remains that this coin was found in the Hoshiarpur District, Punjab, along with a number of Huna coins (J.R.A.S., 1907, p. 96 and pl. Fig. 1). Among Hūṇa coins not a few are imitated from Gupta coins and these offer the nearest parallels to the group under discussion. Again the portrait of the king, whether head, bust or three quarter length, figures on the obverse of all Chandragupta II's copper coins except the very minute ones, on which we have his name instead. Similarly on the two authentic copper coins of Kumāragupta I described above we have a three

quarter length figure of the king on the obverse. On these three coins, however, although the field is large enough for a portrait of the king on the obverse, we find a different motif, viz., *Simhāvāhini* or the goddess *Durgā* seated on couchant lion, a well-known reverse type of Gupta gold coins, without the sharpness of relief of the original. All details seem to have been overlooked by the inexpert coiner so that the coins look as if they had been cast in rough moulds and not struck with dies carefully worked with a graver like all the authentic issues of the Guptas. It is thus difficult to subscribe to the view that these coins were issued by *Kumāragupta I.*

It would not be out of place to mention here that Allan's description of the reverse, (wrongly described as 'obverse') as figuring 'an altar' (B.M.C., p. 113) needs correction; as on Rawlins' specimen, which I have carefully examined, the lower part of *Garuḍa* is unmistakeable; again on the Indian Museum coin illustrated by Smith (I.M.C., Pl. xvii, 9) the figure of *Garuḍa* with outstretched wings can be clearly made out. Smith, too, originally described the device as an altar (J.R.A.S., 1907, p. 96) but rectified his error in the Indian Museum Catalogue (I.M.C., Vol. I, p. 120). Therefore, the reverse type of these three coins can be taken to be the usual reverse of Gupta coins, namely the *Garuḍa*, with a legend.

The so-called coins of *Valabhi* fabric, which have long intrigued numismatists, may next be considered in passing. They are generally of an irregular shape but similar in design to, though at times coarser in execution than, the western silver issues of the Gupta emperors.

Nevertheless they are not forgeries as Böhler held (*vide* Smith's 'Observations on the Gupta Coinage' at pp. 138 and 140) or imitations, as Smith originally thought ('The Coinage of the Early or Imperial Gupta Dynasty, p. 145). The latter, indeed, later became convinced (*vide* 'Observations on the Gupta Coinage', p. 139) that these coins are a genuine Gupta issue. They are of copper, plated with silver, though in a few instances the plating has completely disappeared. This silver plated currency was deliberately issued on a debased silver standard at a time when there was a great dearth of silver but they cannot be regarded as a copper coinage. The British Museum Catalogue, therefore, very properly includes them among the silver issues of *Kumāragupta I.*

Our conclusions in this paper may be briefly summarised as follows:—

- (1) Only two copper coins can be ascribed with absolute certainty to *Kumāragupta I.*, namely Tregear's coin in the Bodleian and the coin in my cabinet. The obverse of these is: King in profile standing three quarters, holding flower in right hand and left on hip; the reverse: *Garuḍa* seated facing,

with 'outstretched wings, and inscription below :
 Śrī Kumāraguptaḥ.

- (2) The so-called 'Umbrella' type of coin ascribed by V. A. Smith to Kumāragupta I is probably a coin of Chandragupta II.
- (3) The three copper coins, two figured in B.M.C., Pl. xviii, Nos. 25 and 26, and one in J.R.A.S., 1907, described on p. 96 and illustrated in the Plate as Fig. 1, are Hūṇa imitations of Gupta coins. The obverse of these coins represents the goddess *Simhavāhini* seated facing on lion l. and holding probably *pāśa* in right hand and an indistinct object, whether cornucopia or lotus in left ; the reverse represents *Garuḍa* with outstretched wings seated facing, and inscription below : Śrī Ku.
- (4) The coins of Valabhi fabric of Kumāragupta I are not a true copper coinage.

AJIT GHOSE.

348. TWO GOLD COINS OF SIDDHARĀJA (JAYASIMHA).

These two gold coins form part of a hoard discovered in village Pandwaha, Tahsil Garnatha, District Jhansi, U.P., in 1905, which included seven silver coins of the Ādivarāha type issued by the Pratihara King Bhojadeva (circa 840-890 A.D.). The gold coins were acquired and presented to the Provincial Museum, Lucknow, by the United Provinces Government in November 1905, and were then registered as coins of 'Mediaeval India'. Recently while preparing a list of gold coins in the Lucknow cabinet, I tried to study them and discovered that the obverse and reverse legends were identical. I took rubbings from the coins and forwarded them to Mr. K. N. Dikshit, Deputy Director General of Archaeology in India, who very kindly read the inscriptions for me and held that they were the issues of Siddharāja (Jayasimha) the most renowned and powerful king of the Chaulukya (Solānki) dynasty of Anhilwada (Gujarāt). So far as I know, issues of this type and fabric are unknown and do not exist in any other Museum in India.

It would be worth while referring here to the exploits of Siddharāja. He was a distinguished ruler of the Chaulukya dynasty of Anhilwada in Northern Gujarāt which held sway in the eleventh and twelfth centuries A.D. and was the seventh ruler of the line (c. 1093-1143). He carried his victorious arms to Cutch on one side and Malwa in the north-east and was called Avantīnātha in inscriptions. The Vadnagar Praśasti of the reign of his son Kumārapāla published in the *Epigraphia Indica*, Vol. I, page 295, speaks of his taking prisoner Yaśovarman, the King of Malwa, and his possessing the 'philosopher's stone', with the help of which he paid the debts of his subjects. He was a great patron of learning and arts and founded an era. It is thus natural that such a powerful ruler should have tried to strike his own coinage particularly after his dominions had touched those of Kanauj, where gold currency was in vogue. This, however, appears to have been in an experimental stage or confined to a few issues only.

The two coins have an identical legend 'Siddharājah' on both sides in characters of the 11th-12th century A.D. The weight and size fairly corresponds to the gold coins struck by his contemporary, King Govinda-Chandradeva (c. 1112-1160), but the type is quite different, there being no effigy of any god or goddess on the reverse. The metal, no doubt, appears to be pure gold, free from alloy, but the irregular shape and the indistinct character of the impression rather unusual for gold, create doubt as to whether these pieces were intended for regular

currency, or struck for a special occasion, such as the conquest of Malwa.



Weight 66 grs.

Size .85

Legend : l. 1 Śrī-Siddha-
l. 2 rājāḥ 11.



Weight 65 grs.

Size .8.

Legend : l. 1 ' (Śr)ī-Siddha-rā-
l. 2, jāḥ 11.

PRAYAG DAYAL.

349. ON CERTAIN UNPUBLISHED COINS OF THE SULTĀNS OF MĀLWA.

The history and coinage of this dynasty has been completely dealt with in the pages of the Numismatic Chronicle. The first exhaustive paper on the subject was published in Vol. III, Fourth Series, in the year 1904 by Dr. L. White King and the second which incorporated all the researches of the next twenty-seven years (1904–1931) was published in Vol. XII, Fifth Series, by Mr. H. Nelson Wright. In the present paper it is intended to describe a large number of such coins as have not been noticed hitherto. Almost all of these are from the cabinet of the Prince of Wales Museum, Bombay, a majority having been purchased from Mr. G. T. M. Hamilton of Allahabad. About two dozen coins from the collection of Mr. Ratilal M. Antani of Udaipur are also included herein, and are distinguished from the Museum collection by the letters *a*, *b*, or *c*, etc., added to the serial number.

Shapes.

Although the coins of Mālwa were generally minted in square form, the round type was also issued by some of the rulers. Some of the rulers minted purely round coins, and others struck exclusively square issues, while there were some who seem to have issued both round and square coins :—

- (a) The coins issued by Hoshang Shāh, Muhammad I and Kādir Shāh (under Māhmud III of Gujarat) are all round in shape.
- (b) The coins struck by Māhmud II, Muhammad II, Ibrahim Lodi and Akbar, the Mughal Emperor, are all square.
- (c) The coins minted by Māhmud I, Ghiyās Shāh, Nāsir Shāh, Bahadur Shāh (of Gujarat), Muhammad Adil (Suri) and Bāz Bahadur are of both varieties, viz. the round and square in shape.

The coins catalogued in this paper are different from those published so far, in one way or the other. It is not deemed necessary to narrate such peculiarities in each case as can be seen in the body of the Catalogue. Only the few more important features which are of special interest are detailed below :—

- (a) Coin No. 11 is a unique billon piece of Ghiyās Shāh as heir-apparent. The mint is Shādīābād, date (8)50 A.H. and the weight is 165 grains.

So far it was believed that Mahmūd had conferred on his son the privilege of striking coins between the

year 862 and 868 H. because the coins of only those years had come to our notice. But the discovery of this singular piece proves that this privilege was conferred on Ghiyās Shāh much earlier than 862 H. History is totally silent as to the date when Ghiyās Shāh was proclaimed Heir-apparent and the theory that he was so appointed about the year 862 H. is based entirely on the data of coins known so far. We know from historical sources that Ghiyās Shāh was taking part in the military operations with his father from a very early time. According to Farishta, this ruler as he had, during the last thirty-four years, been employed constantly in the field, fighting under the banners of his illustrious father, he now yielded up the sword to his son in order that he might himself enjoy ease the rest of his days (*vide* Brigg's Farishta, Vol. IV, p. 236). He ascended the throne in 873 H. and if he was fighting for thirty four years previously, he ought to be quite a strong and grown-up prince in the year 839 H., which is the year of his father's accession to the throne. We also know that Mahmud was always engaged in wars against his neighbouring kings from the time he ascended the throne. In the words of Farishta 'Scarcely a year passed that he did not take the field, so that his tent became his home and his resting place the field of battle'. This shows that the son was acting as a Commander under the banner of his father from the time of the latter's accession till his death in 873 H. and it seems quite safe and natural to suppose that Mahmūd must have appointed his son Ghiyās Shāh as Heir-apparent some years after his accession. The year 850 H. in which this coin was struck cannot definitely be said to be the year when Ghiyās Shāh was proclaimed the Heir-apparent. He might have been declared even earlier, but as this is the only piece so far known it carries the date of his becoming Heir-apparent back from 862 to 850 H.

- (b) Coin No. 15 is another unique rupee of Sultan Ghiyās Shāh. The date is 877 A.H. and it weighs 164 grains. The legend on this coin is the same as on No. 33 of Mr. Wright, but it differs in shape, weight and date and is the earliest rupee of this Sultan.
- (c) Coin No. 28 is the third unique silver piece of this Sultan. The weight of this tiny piece is 13.5 grains and as such is the lightest coin known so far in the Malwa series. According to the standard of 96 rati this is the one twelfth piece of a Tanka.

- (d) Coin No. 117a is the fourth unique silver coin of Bāz Bahadur. It weighs 106 grains. The silver coins of this Sultan were not known so far and this is the only piece which has come to our notice.

All these four unique coins are round in shape.

- (e) Up till now only one type of Bāz Bahadur's coins was known (*vide* No. 98 of Mr. Wright). But in this collection three more types have been noticed.

These may be referred to in the body of the Catalogue at its proper order.

- (f) Dr. White King has figured two coins of Akbar, the Mughal Emperor, but Mr. Wright has not mentioned any. In this collection there are two copper square coins of this ruler. The date 969 A.H., which is the year of the Mughal conquest of Mālwa, can be read on one and the mint Māndu on the other.

CATALOGUE OF COINS OF MĀLWA.

Hoshang Shāh.

A.H. 808-838=A.D. 1405-1435.

- (1) *Ṛ*. 153 grains. A.H. 838.

Similar to No. 2 of Mr. Wright¹ but date 838.

This coin was struck in the last year of his reign.

- (2) *Æ*. 66 grains. Mint Shādiābād.

Obverse legend is inscribed in a somewhat different way and

M.M. No. 27 is to be seen both above and below the *و* of *هوشنگ*.

Pl. 12

- (2a) *Æ*. 41 grains. Mint Shādiābād.

Similar to No. 4 of Mr. Wright but smaller and M.M. No. 11.

- (2b) *Æ*. 28 grains. Mint Shādiābād.

Similar to above but smaller and M.M. No. 20.

Muhammad Shāh I.

A.H. 838-840=A.D. 1435-1436.

- (3) *Ṛ*. 159 grains. A.H. 839.

Obverse legend same as on No. 5 of Mr. Wright.

¹ The article on 'The Coinage of the Sultans of Malwa' by Mr. H. Nelson Wright, published in the Numismatic Chronicle, Fifth Series, Vol. XII, 1931.

Reverse :—

محمد
شاه بن هو
شنگشاه اللطان

سنه ۸۳۹

Pl. 12

- (4) Æ. 120 grains. Mint Shādiābād.

Similar to No. 7 of Mr. Wright but in double the weight.

Māhmud Shāh I.

A.H. 840–873=A.D. 1436–1468.

- (5). A. 169 grains. A.H. 841. Mint Shādiābād.

Similar to No. 8 of Mr. Wright but is dated احدى و اربعين و مائتاً i.e. 841 A.H.

The date and mint inscribed on the circular margin is quite distinct and this is probably the earliest gold coin of this Sultan.

- (5a) Sq. Billon. 150 grains. A.H. 868.

Similar to No. 13* of Mr. Wright, but date ۸۷۸, the middle figure written in reverse order.

- (6) Billon. 92 grains. A.H. 848. Mint Shādiābād.

Similar to No. 14 of Mr. Wright. The coins of this type generally weigh from 125 to 142 grains, but this coin which weighs only 92 grains is surely of a smaller denomination not known so far.

- (7) Billon. 134 grains. A.H. 858. Mint Shādiābād.

This coin is also similar to No. 14 of Mr. Wright but is dated 858 A.H. Mr. Wright says that the dates known on this type are from 845 to 853 A.H. but the date on this coin is unknown so far.

- (7a) Billon. 60 grains. Mint Shādiābād. A.H. (85)2.

Similar to No. 16 of Mr. Wright but date 852.

- (8) Billon. 61 grains. A.H. 853. Mint Shādiābād.

This is similar to No. 16 of Mr. Wright but is dated 853 A.H. The dates known so far are 845, (84)7, 848 and 854 A.H.

- (8a) Billon. 52 grains. Mint Shādiābād.

Similar to No. 17 of Mr. Wright, but محضرت شاد یا باد in the margin and not date as in No. 17 of Mr. Wright.

(8b) Billon. 36 grains.

Obverse :—

السلطان
الحليم الكريم
علا الدنيا و الدين

Reverse :—

ابو المظفر خلع
محمود شاه

M.M. No. 65 to left of علا.

The arrangement of legend is somewhat different from
No. 18a of Mr. Wright. Pl. 12

(9) Sq. Billon. 37 grains. A.H. (8)70.

Similar to No. 19 of Mr. Wright which has no date.

The date on this coin can be read as (8)70 A.H.

(10) Æ. 17 grains. Mint Shādiābād.

Similar to No. 22 of Mr. Wright except in weight.

This coin which weighs only 17 grains is supposed to be
the third lightest coin struck by the Mālwa Sultāns.

(10a) Æ. 51 grains. A.H. 872. Mint Shādiābād.

Similar to No. 25 of Mr. Wright but date 872.

Ghiyās Shāh.

A.H. 873-906 = A.D. 1468-1500.

I. As Heir-apparent.

Unique. (11) Billon. 165 grains. A.H. (8)50. Mint Shādiābād.

Obverse :

السلطان
بن السلطان ولم
في عهد خليفه الزمان
العالمين

Reverse :

ابو الفتح الخلع
غياث شاه السلطان
ضربت بدار الملك
شاديا باد ٤٠ (٨)

Pl. 12

II. In his own right.

(12) Sq. A/. 170 grains. A.H. 885.

Obverse :—Similar to No. 31 of Mr. Wright but no M.M.

Reverse :—Similar to No. 31 of Mr. Wright but M.M. No. 9
and date 885.

- (13) Sq. *AV*. 169 grains. A.H. 890.

Obverse :—Similar to above but M.M. Nos. 5 and 13.

Reverse :—Similar to above but date 890.

- (14) Sq. *AV*. 168 grains. A.H. 891.

Obverse :—Similar to above but M.M. No. 14.

Reverse :—Similar to above but date 891.

The dates and M.M. on all these three coins are unpublished so far.

- Unique. (15) *R*. 164 grains. A.H. 877. Size 1·1 inch.

Obverse :—Legend same as on No. 33 of Mr. Wright but no M.M.

Reverse :—Legend same as on No. 33 of Mr. Wright but date 877. Pl. 12

- (16) Sq. *R*. 71 grains. A.H. 885.

Similar to No. 34 of Mr. Wright, but no M.M. on obverse, and date (8)85 A.H. on the reverse.

- (17) Sq. *R*. 80 grains. A.H. 894.

Similar to above but M.M. No. 8 on obverse ; and date 894 on the reverse.

- (18) Sq. *R*. 82 grains. A.H. (8)95.

Similar to above but M.M. No. 53 on obverse ; and date (8)95 on the reverse.

- (19) Sq. *R*. 79 grains. A.H. (8)95.

Similar to above but M.M. Nos. 53 and 74 on obverse ; and date (8)95 on the reverse.

- (20) Sq. *R*. 81 grains. A.H. 898.

Similar to above, but M.M. No. 5 on obverse ; and date 898 on the reverse.

- (21) Sq. *R*. 83 grains. No date.

Similar to above, but M.M. No. 16 on the obverse.

- (21a) Sq. *R*. 82 grains. A.H. (8)92.

Similar to No. 35 of Mr. Wright, but date (8)92 and M.M. No. 14.

- (21b) Sq. *R*. 84 grains. A.H. (893).

Similar to above, but date (8)93.

- (22) Sq. *R*. 83 grains. A.H. (8)95.

Similar to No. 35 of Mr. Wright, but new M.M. No. 1 and No. 74 on obverse. This M.M. is somewhat different from No. 72 of Mr. Wright. Pl. 12

- (23) Sq. *AR.* 80 grains. A.H. (8)95.

Similar to above but M.M. No. 17 on the obverse.

This M.M. is not known so far on this type of coins.

- (24) Sq. *AR.* 81 grains. A.H. 904.

Similar to above but M.M. Nos. 12 and 17 on obverse ; and date 904 on the reverse.

- (25) Sq. *AR.* 83 grains. A.H. 906.

Similar to above but M.M. No. 19 on obverse ; and date 906 on the reverse.

The dates 904 and 906 were not known so far on this type of coins.

- (25a) Sq. *AR.* 41 grains. A.H. (8)94.

Similar to No. 36 of Mr. Wright but date (8)94 and M.M. No. 4.

- (26) Sq. *AR.* 21 grains. A.H. (8)96.

Similar to above, but M.M. No. 16 and date (8)96 on the obverse.

- (27) Sq. *AR.* 20 grains. No date.

Similar to above, but M.M. No. 5.

Unique. (28) *AR.* 13·5 grains. No date.

Obverse :

غياث خلع
شاه

Reverse :

الطان
بن
الطان

Pl. 12

- (29) Sq. *Æ.* 275 grains. A.H. (8)85.

Similar to reverse of No. 39a of Mr. Wright but M.M. No. 6 and date (8)85 in reverse form.

- (30) Sq. *Æ.* 248 grains. A.H. 885.

Similar to above but date in correct form and weight 248 grains. In this case the weight is new.

- (31) Sq. *Æ.* 127 grains. A.H. (8)86.

Similar to reverse of No. 40 of Mr. Wright but M.M. No. 9 and date (8)86.

- (32) Sq. *Æ.* 132 grains. A.H. (8)88.

Similar to above but M.M. No. 6 and date (8)88.

- (33) Sq. Æ. 118 grains. Date Illegible.

Similar to above but M.M. No. 38.

This M.M. is new on this type of coins.

- (34) Sq. Æ. 130 grains. A.H. 878.

Similar to reverse of No. 41 of Mr. Wright but M.M. No. 3 and date 878 H. This is the earliest coin struck in this type.

- (35) Sq. Æ. 123 grains. A.H. 896.

Same as No. 41 of Mr. Wright but of much lesser weight.

- (36) Sq. Æ. 131 grains. A.H. (9)00.

Similar to above but M.M. No. 17 and of heavier weight.

- (37) Sq. Æ. 128 grains. No date.

Obverse :—Similar to above but M.M. No. 53 over شاه. The M.M. on the reverse is hardly to be met on this class of coins.

Reverse :—Similar to above, but new M.M. No. 2 resembling to Sun. Pl. 12

- (38) Sq. Æ. 118 grains. No date.

Reverse :—Similar to above but M.M. somewhat different from M.M. No. 19. In M.M. No. 19 there is a cluster of seven circles, one being in the centre while the other six on the sides. While in this case there is a cluster of six circles instead of seven and the arrangement being in the same order. Pl. 12

- (38a) Æ. 52 grains.

Obverse :

غياث شاه خلیج
بن محمود شاه

Reverse :

اللطان
بن
اللطان

M.M. No. 17 over lower ط.

Pl. 12

- (39) Æ. 40 grains. A.H. 881.

Similar to No. 42 of Mr. Wright but round and smaller.

- (40) Sq. Æ. 69 grains. A.H. 890.

Reverse similar to No. 43 of Mr. Wright but M.M. No. 11 over the upper ط of اللطان and date 890.

- (40a) Sq. Æ. 31 grains.

Similar to above but no date and smaller. M.M. No. 17 over lower ط of اللطان.

(40b) Æ. 33 grains. A.H. 888.

Obverse :

غياث الخلع
شاه ٨٨٨

Reverse :

السلطان
بن السلطان

M.M. No. 1 of Dr. King.

Pl. 12

(41) Sq. Æ. 71 grains. A.H. (8)95.

Similar to No. 44a of Mr. Wright but M.M. No. 38 on شا
on obverse and lower ط on the reverse.

(42) Sq. Æ. 69 grains. A.H. (8)94.

Similar to No. 45 of Mr. Wright but date (8)94 and M.M.
No. 5 on the reverse.

(43) Sq. Æ. 64 grains. A.H. 898.

Similar to above but date 898.

(44) Sq. Æ. 33 grains. A.H. 888.

Similar to No. 50 of Mr. Wright but date 888 and smaller.
The ث of غياث cuts the الف of غيا.

(45) Sq. Æ. 60 grains. A.H. (8)78.

Similar to No. 51 of Mr. Wright but date 878 and M.M. No. 3
over date. No M.M. on the reverse.

(46) Sq. Æ. 62 grains. A.H. 894.

Similar to above, but heavier and M.M. No. 3 over date.

(47) Sq. Æ. 64 grains.

Obverse :

غياث شاه الخلع
محمود شاه

Reverse :

السلطان
بن
السلطان

New M.M. No. 1 in lower ن .

Pl. 12

Nāsir Shāh.

A.H. 906-916=A.D. 1500-1520.

(48) Sq. A. 169 grains. A.H. 907.

Similar to No. 52 of Mr. Wright but heavier. The weight
of this coin with date 907 is given by Mr. Wright as 120 grains.

- (49)
- R.*
- 83 grains. A.H. 911.

Legend similar to No. 53 of Mr. Wright but M.M. No. 22 on obverse and No. 31 on the reverse.

- (50)
- Sq. R.*
- 145 grains. A.H. 913. Size. .85.

Similar to No. 55 of Mr. Wright but lighter and broader in size.

- (51)
- Sq. R.*
- 16 grains. A.H. 910.

Similar to No. 57 of Mr. Wright but M.M. No. 23 and date 910.

The weight is only 16 grains and as such is the second lightest coin of the Mālwa Sultāns.


- (52)
- Sq. Æ.*
- 178 grains. A.H. 906.

Obverse—similar to No. 58 of Mr. Wright.

Reverse :—

ن
السلطان
بن
ن
السلطان ٩٠٦ M.M. No. 20.

The difference in No. 58 of Mr. Wright and this coin is that in the case of the former, the date is below the ن of السلطان and M.M. No. 20 is above the ط of السلطان while in this case the arrangement is different.

On the obverse of this variety of coins, a mark like this  is noticed. Dr. White King calls it a 'bar knot' and Mr. Wright says that 'The ي forms a knot in the centre of the coin'. My submission is that it is neither a bar knot nor the knot formed by ي in the centre of the coin but it is distinctly a mint mark, No. 46 as figured by Mr. Wright.

Other date :—A.H. 907 (M.M. No. 20, Wt. 165 grains).

- (53)
- Sq. Æ.*
- 82 grains. A.H. (9)06.

Similar to above. This coin which weighs only 82 grains, is probably the half piece of the above variety. Half pieces in this variety are not noticed so far.

- (54)
- Sq. Æ.*
- 159 grains. A.H. 912.

Similar to above, but on reverse M.M. No. 24 and date 912 above lower ن and ط of السلطان respectively.

(55) Sq. Æ. 163 grains. A.H. 915.

Similar to above but M.M. No. 26 instead of No. 15.

(56) Sq. Æ. 132 grains. No date.

Obverse :

ناصر شاه الخلع
بن
عيا نسا

Reverse :

السلطان
بن
السلطان

M.M. 68 over lower س of السلطان.

Pl. 12

(57) Sq. Æ. 67 grains. No date.

Similar to above but on the reverse M.M. No. 69.

(58) Sq. Æ. 80 grains. A.H. 915.

Similar to No. 60 of Mr. Wright but on reverse M.M. No. 26 instead of No. 15.

(59) Sq. Æ. 75 grains. No date.

- Similar to above, but on reverse M.M. No. 22, which is not known on this variety of coins.

(59a) Sq. Æ. 44 grains. A.H. (9)06.

Similar to above but smaller. This piece is decidedly the half unknown piece of the above variety.

Māhmud Shāh II.

A.H. 916-937 = A.D. 1510-1530.

(60). Sq. A/. 168 grains. A.H. 919.

Similar to No. 64 of Mr. Wright, but date 919. This date is unknown so far and it was during this year that Muzaffar Shāh II of Gujarat who had marched against Mālwa, withdrew his army without coming in conflict with Mahmud's forces.

(60a) Sq. A/. 77 grains. A.H. 911.

Similar to No. 67 of Mr. Wright, but date 911 and M.M. No. 26 on obverse.

This is the earliest dated coin in this variety.

(61) Sq. A/. 83 grains. A.H. 917.

Similar to above, but M.M. No. 26 and 27 and not 26 and 28.

(62) Sq. A/. 83 grains. A.H. 918.

Similar to above, but M.M. No. 26 and 22 and not 26 and 28.

(62a) Sq. *AR.* 170 grains. A.H. 915.

Similar to No. 68 of Mr. Wright, but date 915 and M.M. No. 15.

This is the earliest dated coin in this variety.

(63) Sq. *AR.* 169 grains. A.H. 922.

Similar to above, but M.M. No. 26 and 27.

(64) Sq. *AR.* 114 grains. A.H. 927.

Similar to No. 69a of Mr. Wright, but the date which is new is 927 and M.M. No. 31, 40 and 52 on the obverse and M.M. No. 15 on reverse.

(65) Sq. *AR.* 84 grains. A.H. 961 or 921.

Similar to No. 70 of Mr. Wright, but M.M. No. 26, 29 and 55 on the obverse and No. 27, 34, and new M.M. No. 4 on reverse.

Pl. 12

(66) Sq. *Æ.* 148 grains. A.H. 923.

Similar to No. 69 of Mr. Wright but new M.M. No. 5 on obverse and No. 27 on reverse. Copper coins in this type are not known so far.

Pl. 12

(67) Sq. *Æ.* 157 grains. A.H. 918.

Legend similar to No. 72 of Mr. Wright, but M.M. No. 22 in the *ن* on obverse and M.M. No. 26 above the upper *ط* and date 918 over the lower *ط* of *السلطان* on the reverse.

(68) Sq. *Æ.* 134 grains. A.H. 917.

Obverse :

Reverse :

محمود شاه الخلعج

Similar to No. 73 of Mr. Wright

بن ناصر شاه ستا

M.M. No. 71.

Pl. 12

(68a) Sq. *Æ.* 114 grains. A.H. 931.

Similar to No. 72 obverse of Mr. Wright but *ن*¹ in place of *ن*.

(69) Sq. *Æ.* 133 grains. A.H. 918.

Similar to No. 74 of Mr. Wright but M.M. No. 32 and not No. 30 in the second *ن* on obverse.

(70) Sq. *Æ.* 127 grains. No date.

Similar to above but M.M. No. 73 in the second *ن* on obverse and no date.

- (71) Sq. Æ. 60 grains. No date.

Similar to above but no M.M. visible on the obverse and M.M. No. 17 on the reverse.

This is new in weight in this variety.

- (72) Sq. Æ. 135 grains. A.H. 919.

Similar to No. 75 of Mr. Wright, but no M.M. on obverse, and M.M. No. 26 only and date on reverse.

- (73) Sq. Æ. 132 grains. A.H. 919.

Similar to above but M.M. No. 31 in the ☿ on obverse.

- (74) Sq. Æ. 124 grains. A.H. 961 or 921.

Similar to above but M.M. No. 29 in the ☿ on obverse and the centre digit in reverse form and M.M. No. 26 on reverse.

- (75) Sq. Æ. 55 grains. A.H. 922.

Similar to No. 75 of Mr. Wright, but noteworthy in weight.

- (76) Sq. Æ. 123 grains. A.H. 922.

Similar to above but M.M. No. 37 in the ☿ on obverse.

- (77) Sq. Æ. 116 grains. A.H. 923.

Similar to above but M.M. No. 4 on obverse and No. 26 and 29 on reverse.

- (78) Sq. Æ. 62 grains. A.H. 923.

Similar to above but no M.M. on obverse and M.M. No. 26 and date on reverse.

- (79) Sq. Æ. 126 grains. A.H. 924.

Similar to above but new M.M. No. 6 in the ☿ on obverse. The mark which is entirely new resembles to a bird which is probably a sparrow. Pl. 12

- (80) Sq. Æ. 125 grains. A.H. 924.

Similar to above but M.M. No. 55 in the ☿ on obverse and M.M. No. 40 and 46 on reverse.

- (81) Sq. Æ. 128 grains. A.H. 925.

Similar to above but new M.M. No. 7 on the reverse. This is a new mark and differs a good deal from No. 41 and 76 of Mr. Wright. Pl. 12

- (82) Sq. Æ. 125 grains. A.H. 926.

Similar to above but M.M. No. 39 and 76 on reverse.

- (83) Sq. 126 grains. A.H. 927.

Similar to above but new M.M. No. 8 on ☿ on obverse.

- (84) Sq. Æ. 126 grains. A.H. 927.

Similar to above but M.M. No. 26 in the ♂ on obverse.

- (85) Sq. Æ. 123 grains. A.H. 928.

Similar to above but new M.M. No. 9 in the ♂ on obverse.

Pl. 12

- (86) Sq. Æ. 123 grains. A.H. 928.

Similar to above but M.M. No. 15 in the ♂ on obverse and M.M. No. 40 and 52 on reverse.

- (87) Sq. Æ. 127 grains. A.H. 928.

Similar to above but M.M. No. 15 in the ♂ on obverse, and M.M. No. 40 and 42 on reverse.

- (88) Sq. Æ. 63 grains. A.H. 928.

Similar to above but no M.M. and smaller.

- (89) Sq. Æ. 45 grains. A.H. 929.

Similar to above but legend on both sides in the reverse order. M.M. No. 40 on reverse and much smaller in weight.

- (90) Sq. Æ. 122 grains. A.H. 930.

Similar to above but no M.M. on obverse and M.M. No. 29 and 40 on reverse.

- (91) Sq. Æ. 126 grains. A.H. 930.

Similar to above but no M.M. on obverse and M.M. No. 40 and 52 on reverse.

- (92) Sq. Æ. 126 grains. A.H. 931.

Similar to above, but no M.M. on obverse and M.M. No. 29 and 40 on reverse.

- (93) Sq. Æ. 57 grains. A.H. 931.

Similar to above but no M.M. on obverse and M.M. No. 40 on reverse and smaller.

- (94) Sq. Æ. 126 grains. A.H. 934.

Similar to above but no M.M. on obverse and M.M. No. 29 and 40 on reverse.

Other dates:—935 (weight 125 grains); 936 (weight 122 grains); 937 (weight 125 grains).

- (95) Sq. Æ. 68 grains. No date.

Similar to No. 78 of Mr. Wright, but M.M. No. 26 and 29 on reverse.

- (96) Sq. Æ. 62 grains. No date.

Similar to above but M.M. No. 29 and 40 on reverse.

- (97) Sq. Æ. 29 grains. No date.

Similar to above but about half in weight.

(98) Sq. Æ. 55 grains. No date.

Obverse similar to No. 79 of Mr. Wright, but no M.M.
Reverse similar to No. 78 of Mr. Wright, but M.M. No. 18,
below the upper ن, No. 40 over the lower ط and new M.M.
No. 10 above the upper ط. Pl. 13

(98a) Sq. Æ. 36 grains. A.H. 917.

Similar to No. 81a of Mr. Wright, but date 917.

(99) Sq. Æ. 114 grains. Date ۱۶۱۴.

Similar to No. 83* of Mr. Wright, but date ۱۶۱۴; below
(inverted) राजासि(गा).

Muhammad II.

A.H. 917-921.

(99a) Rectangular, Æ. 135 grains. A.H. 922 in reverse form.

Obverse :

محمد شاه خلع
بن ناصر بن شاه

Reverse :

السلطان
بن
السلطان
٦٦٩

M.M. No. 27 and 38.

M.M. No. 17. Pl. 13

Bahadur Shāh of Gujarat.

A.H. 937-944.

(100) Sq. Æ. 57 grains. A.H. 939.

Obverse :

(بہادر شاہ)
بن مظفر شاہ
ن
السلطا

Reverse :

ن
السلطا
بن
ن
۹۳۹
السلطا

M.M. 29 over upper ط

M.M. 40 over lower ط
of السلطان. Pl. 13

(101) Æ. 136 grains. A.H. 940.

Obverse :

(الدين)
الدنيا و
قطب
بن
٩٣٠
ابوالفضل

Reverse :

بهادر شاه
بن مظفر شاه
السلطان

Pl. 13

(102) Æ. 141 grains. A.H. 940.

Obverse :

(ا)لد(ين)
الدنيا و
قطب
٩٣٠
ابوالفضل

Reverse :

Similar to No. 89 of
Mr. Wright.

New M.M. No. 11 above 'بو'.

Other date :—941 A.H.

Pl. 13

(103) Æ. 192 grains. A.H. 942.

Obverse :

الدين
الدنيا و
(نا)صر
٩٣٢
ابوالفضل

Reverse :

Similar to above.

M.M. No. 51 above 'بو'.

Pl. 13

(104) Æ. 183 grains. A.H. 944.

Obverse :

Similar to above
but M.M. No. 55
above 'بو'.

Reverse :

Similar to above.

(105) Æ. 122 grains. A.H. 943 on both sides.

Obverse :

الدین
الدنيا و
قطب
٩٣٣
ابو الفضل

Reverse :

ن
السلطان
٩٣٣
بھادر
(بن مظفر)

Pl. 13

New M.M. No. 12 on 'بو'.

Qādir Shāh (in his own name).

(106) Sq. Æ. 102 grains. No date.

Obverse :—

Fragments of legend found on Mahmud III of Gujarat's copper coins.

Reverse :—

In double sided square.

(ق)ادر

Lower portion illegible and M.M. No. 5.

Pl. 13

(106a) Sq. Æ. 46 grains. No date.

Similar to above but smaller.

Qādir Shāh (Mahmud III of Gujarat).

(107) Æ. 124 grains. A.H. 945.

Obverse :

محمود لطيف
ه
ش
بن
بھادر شالہ

Reverse :—

Similar to No. 90 of Mr. Wright.

Pl. 13

(108) Æ. 60 grains. A.H. 945.

Obverse :—

محمد شاه

ه

ش

بن

لطيف بهادر (شاه)

Pl. 13

(108a) Æ. 52 grains. A.H. 94(5).

Obverse :—

محمد

شاه

بن

۹۴۵ بهادر

Reverse :—

السلطان

بن

السلطان

Pl. 13

M.M. No. 22.

(109) Æ. 153 grains. No date.

Obverse :—

Similar to No. 108
above.

Reverse :—

Similar to No. 91
of Mr. Wright.

(110–116) The following seven round copper coins which can definitely be assigned neither to Gujarat nor Malwa, owing to their legend and dates are rather peculiar in type. The legend on all of them runs as follows :—

Obverse :—

الدنيا و الدين

قطب

ابوالفضل

and date.

Reverse :—

لطيف شاه

بن

محمد شاه

Pl. 13

On the first four or five coins the Malwa marks Nos. 20, 29 and 34 are found but on the last two no marks are visible. The dates 942 and 945 to 947 A.H. are found on them. They weigh 174, 150–153 and the smallest 51 grains.

Muhammad Ādil (Bāz Bahadur Governor).

(117) Sq. Æ. 49 grains. No date.

Similar to No. 96 of Mr. Wright, but much smaller.

Bāz Bahadur.

A.H. 963-968.

Unique. (117a) *AR.* 106 grains. No date.*Obverse* :—

The Kalima.

Reverse :—

(با) ز بهادر شاه سلطان

خلد الله للملّة

M.M. No. 29 and 34.

Pl. 13

(118) *Sq. Æ.* 52 grains. No date.

Similar to No. 98 of Mr. Wright, but half piece.

(119) *Sq. Æ.* 103 grains. A.H. 965.*Obverse* :—باز بهادر شاه
خلد الله

M.M. No. 22.

Reverse :—Similar to No. 98
of Mr. Wright.

Pl. 13

(120) *Sq. Æ.* 107 grains. A.H. 96X.*Obverse* :— . .

(باز) بهادر شاه

ن

السلطان

M.M. No. 22.

Reverse :—

ابوالمظفر

خلد الله

٩٦ ×

سلطان

Pl. 13

(121) *Sq. Æ.* 52 grains.

Similar to above, but half piece.

(122) *Sq. Æ.* 52 grains. A.H. (9)65.*Obverse* :—باز بهادر
شاه
السلطان*Reverse* :—

و ٦٤

M.M. No. 73.

Pl. 13

Akbar.

(123) Sq. Æ. 103 grains. A.H. 969.

Obverse :—

اکبر
محمد
جلال الدين

Reverse :—

۹۶۹
نصده

Pl. 13

(124) Sq. Æ. 54 grains. Mint Māndu.

Obverse :

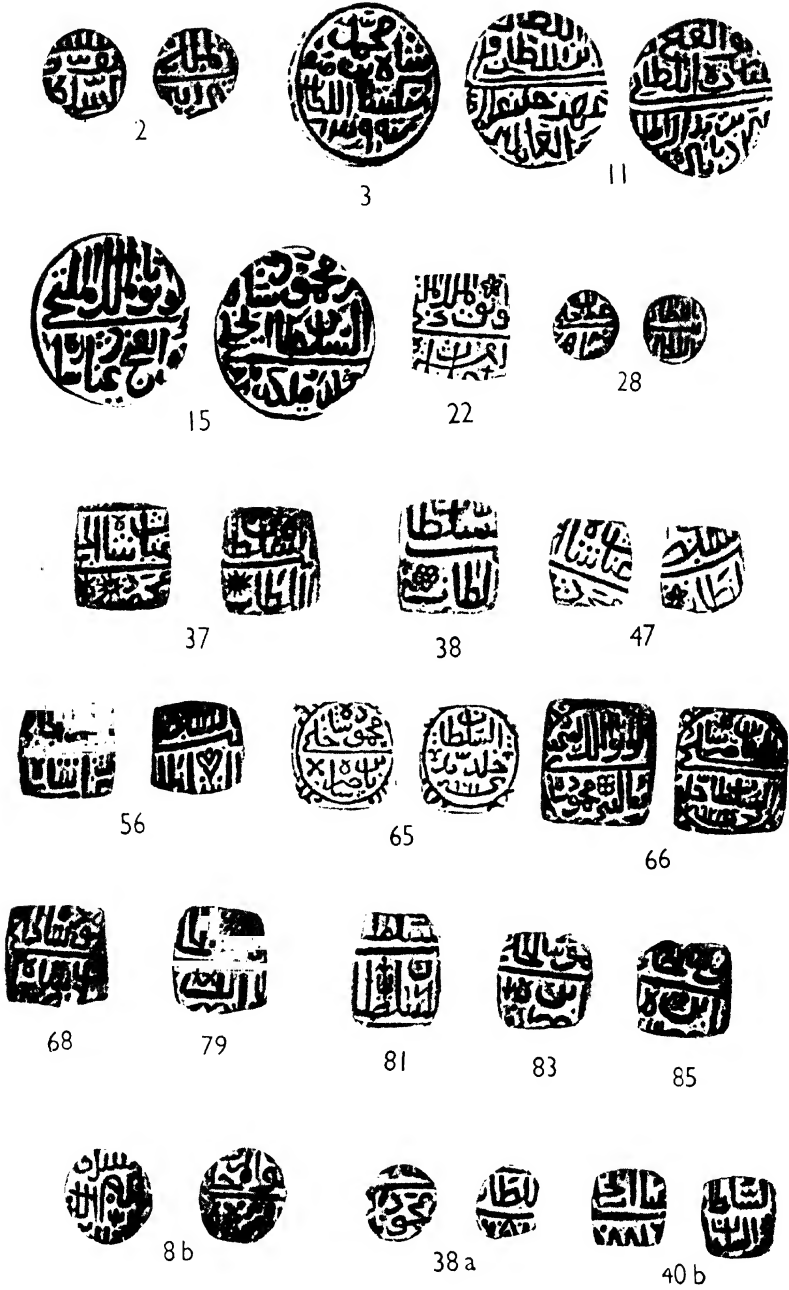
Similar to above.

Reverse :—

و
ضر
مند

Pl. 13

C. R. SINGHAL.





98



99 a



100



101



102



103



105



106



107



108



108 a



110



111



117 a



119



120



122















123



124



A. TABLE OF NEW MARKS FOUND ON MALWA COINS.

1 	2 	3 	4 
5 	6 	7 	8 
9 	10 	11 	12 

B. NUMBER OF COINS ON WHICH THESE MARKS OCCUR.

Mark No.	Coin No.	Mark No.	Coin No.
1	22 and 47	7	81
2	37	8	83
3	38	9	85
4	65	10	98
5	66	11	102
6	79	12	105

350. THREE COIN COLLECTIONS.

The collections of Indian coins described here were made by Colonel C. Seton Guthrie, R.E., Doctor J. Gerson da Cunha of Bombay, and Pandit Ratan Narain of Delhi, and belong to the latter half of the nineteenth century. The first two are of outstanding character ; I select the third from the minor collections of the period. Colonel Guthrie's activities cover the third quarter of the nineteenth century. After his death in 1875, his coins were purchased by the German Government in 1876 and are in the Kaiser Friedrich Museum, Berlin. It was in the same year 1876 that Dr. da Cunha began to collect. His coins were sold by auction in 1889 at Sotheby's Rooms in London and he died in 1900. Pandit Ratan Narain was an official of the District Court at Delhi, and his cabinet shows what could be done in that ancient capital by a man of small means ; the Pandit died in the year 1887 or 1888. Rodgers, the author of the Lahore and Indian Museum Catalogues written in the eighteen nineties, has noted that the Ratan Narain collection went to the United States of America as it was purchased by Durkee, a citizen of Chicago (or New York). Durkee's Gauntlet Brand Select Spices and Mustard, also Oriental Salad Dressing are advertised in Lippincott's Monthly Magazine, Philadelphia, 1900. I understand that the coins were left to the Metropolitan Museum, New York. They are now in the Museum of the American Numismatic Society, New York, where I had the pleasure of seeing them in the summer of 1921. Dr. da Cunha was an active member of learned Societies and the author of noteworthy monographs and papers on history, coins and kindred subjects. I have not found any publication by Colonel Guthrie or by Pandit Ratan Narain.

The background of this study is provided by the allusions in the writings of that fine numismatist Mr. Charles J. Rodgers of Amritsar, whose catalogues I have already mentioned. He was an ardent collector in the Punjab from about the year 1870, and a regular contributor on numismatic and historical subjects to the Journal of the Asiatic Society of Bengal and other periodicals from 1879 almost till his death in 1898 (1). These papers were beautifully illustrated by his own drawings (2). Mr. Rodgers belonged to the numismatic tradition of Sir Alexander Cunningham with whom he was a regular correspondent. At first a worker in the same field, that of the ancient coins of India, he soon quitted it to specialize in the issues of the Delhi dynasties. His cabinet was purchased by the Punjab Government and catalogued by himself. I examined Treasure Trove on behalf of the Government of the Punjab for thirteen years from 1907

and became familiar with the writings of the man who was doing the same work till ten years previous to myself. Rodgers' papers and the introductions to his Catalogues are enlivened by expressions of personal opinion and references to forgotten worthies. There are repeated tributes of respect and veneration to his 'numismatic father and teacher', that 'prince of Indian numismatists' General Sir Alexander Cunningham, whose cabinet was 'beyond and above all present collections'. Although Cunningham wrote his first coin paper in 1840, he overlapped Rodgers as an active worker by a quarter of a century and died only five years before him. Both Cunningham and the great Edward Thomas were awarded the Medal of the Numismatic Society of London (now R.N.S.) in the years 1886 and 1885, respectively, and the latter is in the *Dictionary of National Biography*.

Rodgers was handicapped throughout by lack of money : he lived and died a poor man. He says that he had to let precious things slip through his hands, or purchased them for sale to obtain funds for his Mughal series. He names three rarities which he always regretted letting go, the heavy rupee of Humayun found at Saharanpur, the rupee of Shah Jahan with name Khurram obtained in Lahore, and the rupee of Shah Shuja Muhammadi acquired at Delhi. Still they were not lost to posterity as all three are in the British Museum. One of my earliest finds in Delhi was another piece of the same Mughal claimant Shah Shuja, and I ultimately possessed three. A second Khurram rupee was in the Ratan Narain collection and a fine heavy rupee of Humayun showing the mint Agra in the Guthrie cabinet. The latter issue is a restoration piece and marks a new epoch as it is the first Mughal rupee (3).

The references to Rodgers' co-workers are invaluable for a history of Mughal coin collecting. He was full of enthusiasm and missionary zeal, and was equally anxious that the Indian Museums should get their fair share. This was the reason why he repeatedly drew attention to collections which he hoped might be acquired. In 1880 no Museum in India had a coin catalogue ; while the Calcutta Museum was destitute of coins, the Berlin Museum was getting everything good in Europe. For a long time there was no response to Mr. Rodgers' efforts. Eventually the Punjab Government purchased the bulk of his cabinet and financed the production of a Catalogue without a single illustration. Rodgers' Suri and Sikh coins are in the Madras Museum.

In *J.A.S.B.*, 1880 there are references to C. R. Stulpnagel, Pandit Ratan Narain and J. G. Delmerick. The last named was an Extra Assistant Commissioner, and a contemporary of Ratan Narain in Delhi. The *J.A.S.B.* for 1881 and 1882 contained papers by A. F. R. Hoernle. Rodgers was then in the full tide of his activity. Collections mentioned by him are those of the

Rev. J. Doxie (4), Alexander Grant and W. Theobald. By 1884 Vincent Smith was writing about Gupta coins and J. Gibbs on Ramatankas. A year later Rodgers mentions L. White King, 'a most indefatigable numismatist'. In 1886 appears the name of J. D. Tremlett, Judge of the Chief Court, Lahore, (5), also of Dr. da Cunha as the owner of some fine coins of the Delhi Sultans. On p. 192 of *J.A.S.B.*, 1886 there is an allusion to the cabinets of Sir E. C. Bayley, Edward Thomas, Alexander Grant and Cunningham; all the coins of a Colonel Stacey are said to have gone to Berlin. In the Preface to Part IV of the *Punjab Museum Catalogue*, Calcutta 1895, Rodgers mentions the collections of Eugene Leggett of Karachi, of Dr. Stulpnagel and Tom Higgins of Lahore, of Pandit Ratan Narain of Delhi, and of an Indian Army General whose name is not given (6). All had been dispersed and from them no Indian Museum had derived one single coin. This was regrettable but the first part is not true of the Ratan Narain cabinet; it has found an appreciative and permanent home in the New World.

Rodgers was a constructive and unselfish lover of his art. His criticisms were impelled by an abiding desire to create and improve facilities for the study of coins in India as historical documents, and for the proper use of Indian Museums and of Provincial Coin Cabinets. He reaped some reward during his lifetime but nothing like the response he deserved.

There is little to be gleaned about Colonel Charles Seton Guthrie, R.E., apart from his prominence as a coin collector. I gather that he was of good Scotch stock, possessed considerable means, and lived at one time in Great Russell Street. He was certainly in touch with the British Museum and with experts like Edward Thomas. We are told in the obituary notice that his quiet and private life, aided by an ample fortune, enabled him in a remarkable manner to promote the study of Oriental Numismatics, though he was not the author of any memoir on the subject (7). Colonel Guthrie was a keen collector for many years in India till the very day of his sudden and unexpected death. It was understood that Colonel Guthrie's collection which amounted to 1340 *Λ.*, 7100 *Δ.* and 10,000 *Æ*, had been offered to the German Government for the moderate sum of £5,000. There was no catalogue beyond that of the coins of the early Khalifas prepared by Stanley Lane Poole.

This magnificent collection was actually purchased by the German Government in the year 1876; it is in the Kaiser Friedrich Museum, Berlin. Its importance had been foreshadowed by the numerous references to 'the choice Pathan series' in Edward Thomas's classic work *The Chronicles of the Pathan Kings of Delhi*, London, 1871. At the time of writing, the collection was in England. Three years later Stanley Lane Poole published a catalogue of the coins of the Amavi Khalifas in the Guthrie cabinet (8). The series which it describes is scarcely, if at all

inferior to the corresponding portion in the British Museum.' It will be realized with what excitement I anticipated seeing this great collection about which so little was known. I visited Berlin in the spring of 1922 and was received with great kindness by Dr. Regling and his staff. I am much indebted to him for the generous permission to describe unpublished coins. The character of the Mughal section is apparent when I say that Colonel Guthrie possessed thirty-four zodiacal mohurs of the Emperor Jahangir covering all twelve signs, mostly in mint state, together with three or four portrait mohurs of Jahangir, superb hawk mohurs of Akbar struck at Asir and Agra mints and a silver mehrabi coin of Akbar. The zodiacal pieces included the gold and silver Ram of Fathpur mint, a gold Gemini of Ajmir and a silver Capricornus of Lahore mint. An outstanding piece is the rupee of Humayun's restoration period which shows the mint Agra quite clearly (9). The Pathan section needs no commendation from me. I saw several interesting pieces still unpublished; the most curious of these is a billon coin of Sikandar Sur modelled on the billon issues of Sikandar Lodi. Mr. H. Nelson Wright has been allowed to include these in his forthcoming comprehensive work on the money of the Delhi Sultans. Ancient coins are not lacking. Two Indo-Bactrian drachms of Telephus were published and illustrated in A von Sallet's *Die Nachfolger Alexanders des Grossen in Baktrien und Indien*. Berlin, 1879 (10). I fear, however, that neither specimen is genuine.

J. Gerson da Cunha was born at Arpora (Goa) on the 3rd February, 1844; he was the eldest son of Francisco Caetano da Cunha, Lieutenant Commandant of the Fort of Baga, to whom he dedicated his *History of Chaul and Bassein*. He qualified for the medical profession in London and Edinburgh, and returned to Bombay in 1867, in which city his career of useful medical work only ceased with his death, which occurred at his residence in Bombay on the 3rd July 1900 (11). He was a man of learning and culture and became a regular contributor of papers on antiquarian subjects, mainly to the *Journal of the Bombay Branch of the Royal Asiatic Society*. He was well equipped for the pursuit of these studies as in addition to his knowledge of Indian languages, he spoke English, French, German, Italian as well as his mother tongue Portuguese. As a coin collector da Cunha specialized in Indo-Portuguese money and in the issues of the European Companies, though his cabinet included typical and valuable specimens covering the whole range of Indian numismatics. He joined the Bombay Branch of the Royal Asiatic Society in 1873. In 1889 he was made a Joint Secretary, especially in connection with numismatics, and became in addition a Vice-President in the year 1892, holding this office till his death in 1900. I had the pleasure of meeting Mrs. da Cunha and her daughter Miss Olivia da Cunha in Bombay in January, 1919.

A Catalogue of the Coins in the Numismatic Cabinet belonging to J. Gerson da Cunha was published in four parts at Bombay in the years 1888 and 1889. The author's distinctions and corresponding memberships, beginning with Knight of the Order of St. Gregory the Great and of the Order of the Crown of Italy, occupy thirteen lines of small print; I am informed that in addition to all these he was Knight Commander of the Literary and Scientific Order of St. James of Portugal. There is a notice of the collection in the *Revue Belge de Numismatique* for 1888, 'Le Medaillier du Dr. da Cunha a Bombay', contributed by A. Engel who says that Dr. da Cunha began to collect in 1876 and by 1888 had accumulated 27,000 coins. Like Colonel Guthrie, he was a collector on the grand scale. The coins cover almost the entire field of numismatics outside Mediæval and Modern Europe; but I think the collection suffers from this diffusion of effort. Within the scope of this paper I can give little more than brief statistics. The First Part of the Catalogue described the gold and silver series of the Oriental Khalifate, 375 *A* and 717 *Æ* a total much in excess of that of the existing British Museum Catalogue. The Second Part is devoted to miscellaneous Muhammadan coins of countries outside India, 1,875 in number, including a large proportion of gold pieces. Part Three is a catalogue of the gold and silver Coins of the Musulman Dynasties of India. The coins of the Delhi Sultans are moderate. There is a gold piece of the Sultans of Kashmir like *Num. Chron.*, 1933, Pl. XXI, 1—Bahmani coins number 7 *A* and 27 *Æ*. The finest section is that of the Mughal Emperors; the pieces catalogued number 236 *A* and 608 *Æ*. Gold coins of Akbar include eleven *ilahi* mohurs of Agra and Lahore mints, and a hawk mohur of Asir. If correctly described, the mohur of Sarhind mint, date 50, Aban, is new. There are two portrait and seventeen zodiacal mohurs of Jahangir, including the complete set purchased from James Gibbs. The latter had been described by Gibbs himself in *Notes on the Zodiacal Rupees and Mohurs of Jehangir Shah, J.B.B.R.A.S.*, 1878. The author relates that he had collected coins from the time he first came to India in 1846. The Gibbs cabinet and that of Dr. Bhau Dhaji were purchased *en bloc* by Dr. da Cunha. I note that the unique Cancer mohur of Nur Jahan is correctly attributed to Kashmir mint in the da Cunha Catalogue (12). There are 67 *A* of Shah Jahan. Amongst the later Mughal gold is a Burhanpur mohur of A'zam Shah. The silver pieces are a representative lot. The Fourth Part of the Catalogue describes 5,000 miscellaneous coins struck in India and elsewhere; these again include some hundreds of gold pieces. I have no doubt that the best series are those of Portuguese India and of the Sassanian dynasty. Dr. da Cunha did not possess a gold Sassanian coin but had 760 silver.

Dr. Da Cunha proposed to print a Fifth Part of the Catalogue in which he hoped to describe a fine set of Ramtankas, of coins of Southern Indian and other Hindu dynasties, and a separate lot of rare pieces which he had reserved for a special memoir. There were in addition the vast series of the copper issues of Muslim dynasties of India. As far as I know these supplementary Parts never appeared. Perhaps the author was discouraged by the results of his London sale in 1889 (13). Not only was there poor publicity but the Sale Catalogue was a hand list of the briefest kind without a single illustration; the coins were put up in lots varying in number from two or three to 18, 35, 55, and 'a parcel'. Nothing could have been more disastrous from the point of view of a good sale, and the coins went at pitiful prices. To quote Mr. C. J. Rodgers, 'These coins are interesting to our Mahomedan fellow subjects in India, and should have been secured for the Museums of the country. Unfortunately no one in authority in India knew of the sale of these coins in London, and so they were dispersed, realizing for the indefatigable and learned collector scarcely their intrinsic value'.

A hand list of the Ratan Narain collection was printed in the year 1888 and circulated for the purpose of selling the coins (15). A Foreword states that the Pandit's father was a Tahsildar in the Delhi District. The son entered Government service and became Nazir in the District Court of Delhi. He chose to remain in this comparatively unimportant post till his death. Being passionately fond of old coins, he devoted almost the whole of his leisure to their collection. The Pandit intended to publish a Catalogue on his retirement but did not live long enough. The great bulk of the coins are pieces of the Delhi Sultans and Mughal Emperors. The printed list is of little use from the point of view of accurate identification but it is clear that the cabinet contained many rarities. There are one-hundred and ten gold coins including nine zodiacal mohurs of Jahangir, two gold pieces of A'zam Shah, one of Kam Bakhsh and two of Muhammad Ibrahim. The silver and copper coins were tabulated in some nine hundred items; there are rupees of Dawar Baksh, Bedar Bakht and Bahadur Shah. The existence of other good coins is clear from those I have been kindly allowed to publish by the American Numismatic Society. (9). The Pathan coins are a fine lot. Noteworthy items are rupees of Eltutmish, Raziya, Bahram, Kaiumurs, Khusru and Sikandar Sur.

The twentieth century ushered in a new era with the appearance of the First Numismatic Supplement to the *J.A.S.B.* in the year 1903. The names of the contributors are well known, the late Dr. G. P. Taylor of Ahmedabad, Mr. R. (now Sir Richard) Burn and Mr. H. Nelson Wright. These three formed the nucleus of the meeting in Mr. Nelson Wright's house at Allahabad when the Numismatic Society of India was founded in December, 1910. The first President was the late Sir John

Stanley, Chief Justice of the Allahabad High Court; I was Secretary and Treasurer for the first ten years of the Society's existence. At the end of the first year the total membership amounted to 46. The Society has continued to grow and flourish, and it happily celebrates its Silver Jubilee in the month of writing, December, 1935.

APPENDIX.

- (1) There is an obituary notice on p. 26 of Proceedings of the London Numismatic Society, 1898-99.
- (2) Mr. Rodgers' only successor in this line has been the late Mr. W. H. Valentine, F.R.N.S.
- (3) For recent descriptions of all three pieces see *Num. Chron.* 1923 and 1926. Another coin of Shah Jahan with name Khurram is the unique couplet nisar, *Num. Chron.*, 1930.
- (4) The Rev. J. Doxie was a missionary in Kashmir. I saw his coins in the cabinet of the late Mr. R. Sutcliffe, Burnley, Lancashire.
- (5) The Tremlett collection, small and choice, is in the Fitzwilliam Museum, Cambridge.
- (6) Attention is invited to the Coin Bibliography on pp. XVII to XIX of Mr. Rodgers' *Catalogue of the Coins in the Government Museum, Lahore* (Calcutta, 1891); also in the same author's *Coin collecting in Northern India*, Allahabad, 1894. I add these references:—
Catalogue of Rare and Valuable Coins, the Property of Mr. Eugene Leggett, Karachi, Sind. Printed by the Sind Gazette, Karachi. No year, pp. 79.
List of Coins of the Late Dr. C. R. Stulpnagel. Prepared by Mr. Chas. J. Rodgers about 1895. Printed by Traill and Co., Calcutta. No year, pp. 39.
- (7) *Proceedings* of the Numismatic Society of London, June, 1875.
- (8) *Col. Guthrie's Cabinet.* Fasc. I. Stanley Lane Poole, Hertford, 1874.
- (9) *Some Notable Coins of the Mughal Emperors of India.* *Num. Chron.*, 1923, 1926. *The Portrait Coins of Jahangir.* *Num. Chron.*, 1929. *The Zodiacal Coins.*—*Num. Chron.*, 1931.
- (10) *P.M. Cat.*, 1914, Vol. I, pp. 4, 87.
- (11) There are obituary notices in Proceedings of the B.B.R.A.S., 1900 and in *Spink's Numismatic Circular*, December, 1900.
- (12) *The Zodiacal Coins of Jahangir.* *Num. Chron.*, 1931, pp. 111, 127.
- (13) *Catalogue of the Highly Important and Valuable Collection of Oriental Coins formed by J. Gerson da Cunha.* Sotheby's, 1889.
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- (15) *List of Indian Coins collected by the late Pandit Ratan Narain, Sheriff, Adalat of Delhi.* Lahore: printed at the New Imperial Press, by Sayyad Rajab Ali Shah, 1888.

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By C. R. SINGHAL

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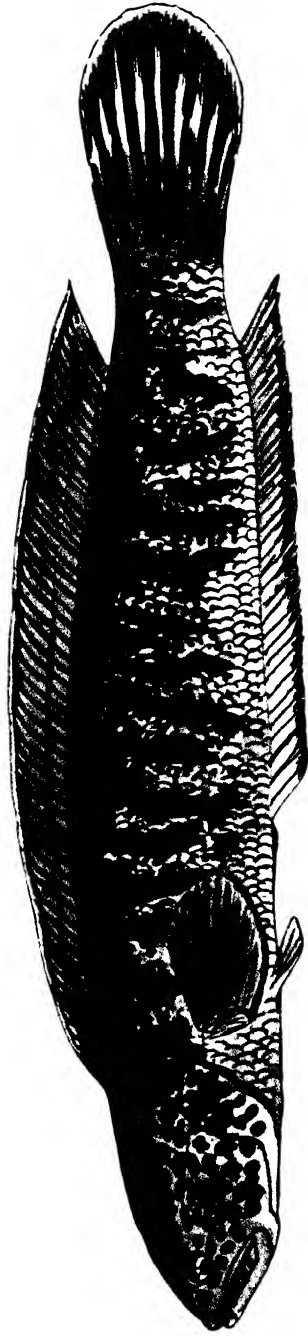
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Opliosiphichthys amphichrous McNeill
THT BOR A CHENG

The Fishes of Northern Bengal.

By G. E. SHAW and E. O. SHEBBEARE.

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INTRODUCTION.

At intervals during the last fifteen years, 1918 to 1933, we have been collecting the fish of the rivers, streams and ponds in the hills and plains of the Darjeeling District and the adjoining Duars. Having found many more species than were previously known in this area, we have made a list of them and now publish it with notes and keys that may help others to identify them.

Broadly our area extends over the whole of the Darjeeling and Jalpaiguri civil districts, though we have not thoroughly explored the tanks of the southern part nor the highest of the hill-streams. We have included in our list species that we have only found on sale in bazaars, but these we have shown in brackets as many of them are brought by rail and may not occur naturally in the district. We have also included a few fish which we have not ourselves found in the area but which have been reliably recorded from it. We discovered only one new species which we named *Glyptothorax horai* after Dr. Hora, and the account of which was published in the Journal of the Bombay Natural History Society (vol. XXXIX, p. 188, 1937).

Names have been checked in all cases by reference to specimens in the Indian Museum and we have to express our

gratitude to the staff of the Zoological Survey, especially to Dr. S. L. Hora, and his assistant, the late Mr. Dev Dev Mukerji, for the help they have given us. We have also to thank the staff of the Fish Section of the British Museum of Natural History for permission to examine their collection and especially Mr. J. R. Norman who has helped us with his advice.

Books consulted have been Day's 'Fishes of India', Day's volumes on fishes in the 'Fauna of British India' series, 'Records of the Indian Museum' and 'Journal of the Asiatic Society of Bengal.'

The fin-formulæ and abbreviations used are Day's and are explained on p. 3. In accordance with the British Museum usage we have called the hinder paired fins 'pelvics' and have substituted this word for 'ventrals' in our quotations from Day, but we have retained the abbreviation 'V' for these fins in the formulæ. The only symbol not used by Day that we have introduced are brackets enclosing the scientific names of those species which we have only obtained in bazaars and may not be indigenous to our area.

The text figures are reproductions from Day's 'Fishes of India', 'Records of the Indian Museum', and 'Journal of Asiatic Society of Bengal'; a few are from our own sketches. We have made use of the best representation known to us of each species. The photographs are our own.

The area is a particularly interesting one. A Bengali proverb says 'Where water, there fish' and, as in all warm, wet countries, there is little water that does not hold them. Himalayan torrents, the large rivers, clear, gravelly jungle streams and muddy ponds each have their own fish populations adapting themselves to varied conditions. A hill stream, often only a few isolated rock-basins in the dry season, is one continuous cataract in the rains, and fish must flatten themselves and stick to the bottom as best they can, or be swept away. Many have adapted themselves beautifully to this end. In the darkness of muddy water feelers are better than eyes and many, the Cat-fishes in particular, have turned this to their advantage.

The borrow-pits, from which earth is dug to raise the level of roads, look unlikely enough spots for aquatic life in March, when whatever caked mud may remain at the bottom is covered in powdery wayside dust; nevertheless, within a few days of the burst of the monsoon, they teem with tiny fish, newly hatched offspring, no doubt, of parents that were scooped out by hordes of muddy children as the pits dried up four or five months earlier. One might expect only mud-dwellers to inhabit these borrow-pits but the majority of the fish in them are beautiful, even gorgeous, members of such silvery genera as *Barbus*, *Barilius* and *Danio*.

Our collection has been divided between the Indian Museum, Calcutta and the Darjeeling Natural History Museum.

EXPLANATION OF PRINCIPAL TERMS AND ABBREVIATIONS
USED IN THE TEXT.

D=Dorsal (fin), 'fin' omitted when the meaning is clear.

P=Pectorals

V=Pelvics (or Ventrals) } 'Paired' fins, homologous with the fore

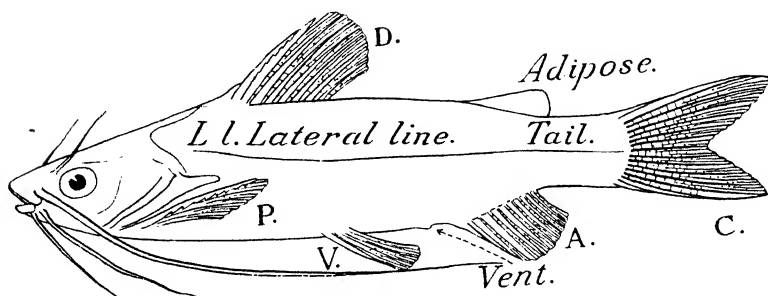
A=Anal } and hind limbs of other vertebrates.

C=Caudal—in common parlance the 'tail', a term here reserved

for the part of the body between the vent and the base of Caudal.

The Adipose dorsal or Adipose fin has no rays. It is present in many of the Cat-fishes (also in trout and salmon).

Formulae for fins :—Figures refer to the number of rays. Two figures separated by a hyphen (-) denote the limits between which the number may vary. An oblique stroke (/) separates two types of rays in one fin, such as undivided or entire from divided or branched rays. A vertical stroke (|) separates



TEXT-FIG. 1.—Lateral view of a Siluroid fish, *Mystus vittatus* (Bloch) labelled to show certain parts of body.

different fins, such as the Dorsal from the Adipose dorsal in Cat-fishes, or the Spiny from the Articulated Dorsal in Perches.

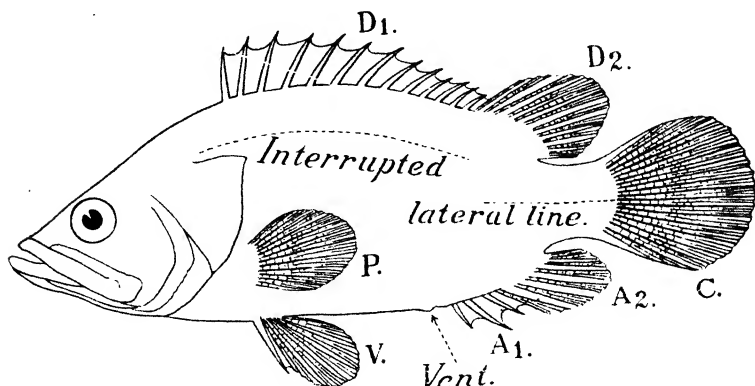
The formula for the Dorsals in the upper figure would be :—
D 2/7 | 0, i.e., 2 undivided and 7 branched rays in the Dorsal ; the '0' representing the rayless Adipose dorsal.

The formula for the Dorsals in text-figure 2 would be :—
D 13 | 11, i.e., 13 rays in the Spiny and 11 in the Articulated Dorsal.

The Lateral Line (L.l.) is a row of perforated scales running from the angle of the gill-opening to the base of the Caudal in most scaled fishes. It may be absent, incomplete or interrupted.

Scales :—These are ordinarily counted along the lateral line, where there is one, the number being shown by a figure following the letters L. l. Where there is no lateral line they are counted along the lateral row of the scales where the lateral line would ordinarily be and shown after the letters L.r. Another count that is sometimes made is the number of transverse rows

of scales between back and belly. It is counted from the base of the Dorsal to the lateral line and again from the lateral line



TEXT-FIG. 2.—Lateral view of a scaly fish, *Nandus nandus* (Hamilton), labelled to show certain parts of body.

to the point of insertion of the Pelvics. The number is shown after the letters L. tr.

The L. 1. (or L. r.) figures are an indication of the comparative size of the scales and a comparison between this figure and the L. tr. count gives an idea of the depth of the body.

Barbels :—These are named after the part from which they spring :—*Nasal* from the region of the nostrils, *Rostral* from the snout, *Maxillary* from the upper jaw and *Mandibular* from the lower jaw.

LIST OF FISHES.

The general classification of fishes adopted in the list is that proposed by Dr. C. Tate Regan, F.R.S., in his article on 'Fishes' in the Fourteenth Edition of the *Encyclopædia Britannica* (1929). The genera under their respective families and the species under each genus are alphabetically arranged. Page references to the descriptions of the species are also given.

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IDENTIFICATION TABLE FOR PRINCIPAL GROUPS.

The list on pp. 4-8 shows the Order, Sub-order, Family, Sub-family, and Genus to which each species belongs. This gives the true scientific relationship of one to another. For the keys, however, we have taken as our units groups of genera of any denomination that suited our purpose; thus the CAT-FISHES correspond to a sub-order, whereas the MURRELS correspond only to a genus. It was to avoid any confusion that might arise from the unequal status of these 'groups' that we called them by English names. A comparison between the position of the various genera in the list above with their treatment in the groups given below will make this clearer.

The first step in identifying a fish with our keys is to determine to which group it belongs and the key which follows is designed with this object.

A. FISH STRIKINGLY ABNORMAL IN SHAPE.

Very squat even when deflated; when inflated it becomes a ball with only tail and fins projecting

The GLOBE-FISH, Group XII, p. 124.

Jaws prolonged into a beak ..

The GAR-FISH, Group VIII, p. 108.

Very slender, nearly straight, with the head of a sea-horse

The PIPE-FISH, Group IX, p. 109.

Eel-shaped

Snout long and tapering .. The SPINY EELS, Group XIII, p. 126.
 Only one fin (the Dorsal) .. The MUD EEL, Group XIV, p. 128.

Note.—We have included the Feather-backs among normally-shaped fishes in spite of their 'tailless' appearance. Some of the Cat-fishes, too, are almost grotesque enough to be called abnormal, but there is no particular feature common to all.

B. FISH COMPARATIVELY NORMAL IN SHAPE.*(a) Two Rayed Dorsal Fins.*

Scales on body and head (in *Ambassis* scales easily rub off)

FISH WITH PERCH-LIKE DORSALS, Group X, p. 109.

(b) One Rayed Dorsal Fin.

An adipose fin behind the rayed dorsal, scaleless

Some CAT-FISHES, Group VII, p. 79.

No adipose fin

Scaleless, barbels at least as long as head, Anal long (29 rays or more)
 Remainder of CAT-FISHES, Group VII, p. 79.

Minute scales embedded in skin, longest barbels shorter than head,
 Anal short (about 7 rays)

The LOACHES, Group VI, key p. 63.

Overlapping scales

Scales on head, which is snake-like, as well as body

The MURRELS, Group XI, key p. 118.

No scales on head

General colour brownish, not metallic

Scales small (L. 1. 98–190) and not very evident especially
 below L. 1., base of Anal and vent enclosed in sheath of
 tile-like scales; rather trout-like

The SNOW-TROUT, Group III, p. 17.

Scales larger (L. 1. 35–70)

The CARPS WITHOUT LARGE SWIM-BLADDERS,
 Group V, p. 60.

General colour metallic

Silvery, abdominal edge sharp and serrated

The HERRINGS, Group I, p. 12.

Silvery, abdominal edge fringed by Anal fin which united
 with small Caudal to make tail-end taper to a point and
 fish appear 'tailless'

The FEATHER-BACKS, Group II, p. 15.

Silvery or leaden, abdominal edge rounded or sharp but not
 serrated

The CARPS, Group IV, key p. 18.

SHORT DESCRIPTIONS OF PRINCIPAL GROUPS.

Group 1. *The HERRINGS*: Corresponding to the family CLUPEIDÆ; 4 genera of one species each included in our list. Probably none of them are found in our area except for sale in bazaars.

Characters:—The whole body, but not the head, covered with overlapping scales; general colour silvery; a single dorsal, no adipose fin and no barbels. The outstanding feature is the sharp and serrated edge of the abdomen.

Group II. *The FEATHER-BACKS*: Corresponding to the family NOTOPTERIDÆ; one genus of which two species are included in our list.

Characters:—The whole body, but not the head, covered with overlapping scales; general colour silvery; a single, very small dorsal, no adipose fin and no barbels. The outstanding feature is the way in which the long Anal, uniting with the small Caudal, makes the tail end taper to a point and the fish appear 'tailless', p. 15.

Group III. *The SNOW-TROUT*: Corresponding to the sub-family SCHIZOTHORACINÆ; 2 genera of one species each are included in our list. They live in hill streams often up to considerable elevations.

Characters:—The whole body, but not the head, covered with overlapping scales but these are small and not very evident especially below the lateral line. Rather trout-like in general appearance. The outstanding feature is a sheath of tile-like scales enclosing the base of the anal and the vent, p. 17.

Group IV. *The CARPS*: Corresponding to the sub-family CYPRININÆ; the largest group in our list, containing 46 species.

Characters:—The whole body, but not the head, covered with well-marked scales, silvery or leaden, often with other colours, usually opaque black or red, or a blue, golden or coppery sheen. Carps have only one Dorsal and no adipose fin; some have barbels, some have not. The abdomen is generally rounded but may come to a cutting edge which, however, is never serrated as in the herrings. A key to the CARPS is on p. 18.

Group V. *The CARPS WITHOUT LARGE SWIM-BLADDERS*: Corresponding to the two families HOMALOPTERIDÆ and PSILORHYNCHIDÆ; our list contains only 3 species.

Characters:—Overlapping scales on the body but not the head; a single Dorsal and no adipose fin, distinguished from the Herrings, Feather-backs, and Carps by being blotched brown in general colour instead of metallic, and from the Snow-trout by the absence of tile-like scales on the anal sheath. Described on pp. 60–62.

Group VI. *The LOACHES*: Corresponding to the family COBITIDÆ; 16 species in this list.

Characters:—Scales rudimentary and embedded in the skin, which generally has a pattern in browns and yellows often a series of dark and light transverse bands. A single Dorsal and no adipose fin. Barbels are short but conspicuous and never longer than the head. The combination of short barbels with absence of an adipose fin serves to distinguish this group from the Cat-fishes, the only group with which it is likely to be confused. A key to the LOACHES is on p. 63.

Group VII. *The CAT-FISHES*: Corresponding to the sub-order SILUROIDEA; an important group in our area, our list contains 34 species.

Characters:—No scales, a single rayed Dorsal and, more often than not, an adipose fin. Barbels are always present and generally they are long. The group contains fishes of all shapes and sizes but bearing an unmistakeable family likeness to one another which is not easily put into words. The presence of barbels longer than the head or an adipose fin or both is, however, a feature that will distinguish them from any other fishes in our area.

There is a key to the CAT-FISHES on p. 79.

Group VIII. *The GAR-FISH*: Corresponding to the family BELONIDÆ; a single species in our area, unmistakeable on account of its long beak, p. 108.

Group IX. *The PIPE-FISH*: Corresponding to the family SYNGNATHIDÆ; a single species in our area like a very slender and straightened sea-horse, p. 109.

Group X. *The FISH WITH PERCH-LIKE DORSALS*: Corresponding to the 3 sub-orders PERCOIDEA, GOBIOIDEA, and ANABANTOIDEA; more than half of all the species of Indian fish have dorsals of this type, but they are typical of salt water rather than fresh and only 11 species are included in this list.

Characters:—The outstanding character is the nature of the Dorsals, of which there are two, the front one having the rays produced beyond the membrane of the fin. The head as well as the body is covered with scales. (*Ambassis* has deciduous scales and frequently appears to be scaleless.) A key to these fishes is given on p. 109.

Group XI. *The MURRELS*: Corresponding to the sub-order OPHICEPHALOIDEA; 6 species in this list, a very distinct group all much alike in shape.

Characters:—Scales on the head, which is snake-like, and the single, very long Dorsal and Anal are sufficient to separate these fishes from all others in our area. Keys on p. 119.

Group XII. *The GLOBE-FISH*: Corresponding to the sub-order TETRAODONTOIDEA; one species in our list, unmistakeable from its shape, squat even when deflated and becoming a ball with only tail and fins projecting when it inflates itself, p. 124.

Group XIII. *The SPINY EELS*: Corresponding to the family MASTACEMBALIDÆ (or RHYNCHOBDELIDÆ); 3 species in this list.

Characters:—Eel-shaped with a long, pointed snout. The Dorsal consists of isolated spines (these may, however, be concealed under the skin in some cases). Described on p. 126.

Group XIV. *The MUD EEL*: Corresponding to the family AMPHIPNOIDÆ; a single species.

Characters :—Snake-like, with a Dorsal but no other fins, living in thick mud, p. 128.

SYSTEMATIC DESCRIPTION.

Group I.—THE HERRINGS.

All our specimens of this group were from bazaars and it is possible that these fish are not really represented in our area. They are mainly sea-fish which ascend the larger rivers and do not reach the sub-montane streams, though *Gudusia chapra* is also found in tanks.

Characters :—Silvery fish without barbels and generally with a deeply forked Caudal. All the species in this list have the abdominal edge sharp and serrated.

KEY.

Anal moderate (19–24 rays)—

L. 1. 46–49

L. 1. 58–62

L. 1. 80–110

Anal long (70–80 rays)

.. *Hilsa ilisha* (p. 13)

.. *Gonialosa manminna* (p. 14)

.. *Gudusia chapra* (p. 12)

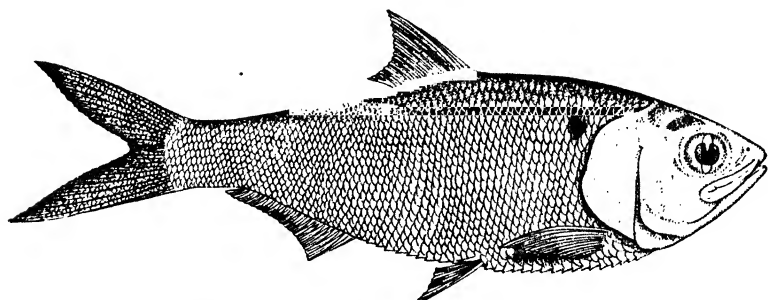
.. *Engraulis telara* (p. 14)

[*Gadusia chapra* (Ham.)], *F.B.I.*, No. 469 *Clupea chapra*.

Bengali : *Khoira* খোইরা; Hindi : *Suiya* सुइया.

D. 14–16. P. 13. V. 8. A. 21–24. C. 17. L. 1. 80–110.

Length of head $4\frac{1}{2}$ – $4\frac{1}{2}$, height of body $3\frac{1}{2}$ –4 in total length. Somewhat compressed laterally, the abdominal profile sharp and saw-edged, tail deeply forked.



TEXT-FIG. 3.—*Gadusia chapra* (Hamilton).

Colour : Silvery with or without a dark shoulder spot. One of our specimens has four irregular dark marks across the back between the base of the dorsal and the head.

Size : Day says it attains at least 8 inches in length. Our largest was about 6 inches long.

Habitat : Our only specimens have been from Siliguri bazaar. Day gives—' Freshwater rivers and tanks in Sind and throughout India as far south as the Kistna River ; absent from the Malabar Coast and Madras '.

[*Hilsa ilisha* (Ham.)], *F.B.I.*, No. 470 *Clupea ilisha*.

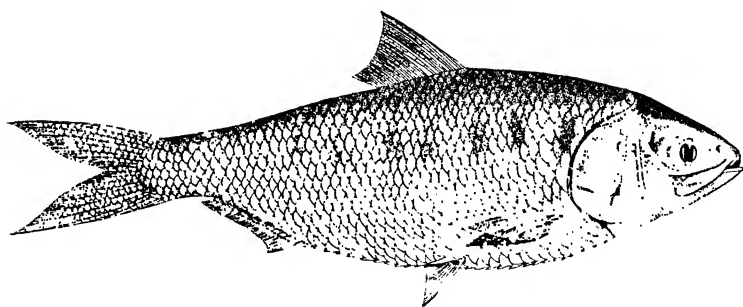
The *Hilsa* (Day also notes another name, the Sable-fish, which we have not heard.)

Bengali : *Ilish* ইলিশ ; Hindi : *Hilsa* हिलसा .

(*Note*.—Although we are aware of no record of this fish from our area, it is so commonly imported and sold here that to omit it from our list might lead to confusion.)

D. 18-19. P. 15. V. 9. A. 19-22. C. 19. L. 1. 46-49.

Body laterally compressed, in general appearance not unlike a herring but somewhat deeper (height of body $3\frac{1}{2}$ - $3\frac{3}{4}$ in total length.) Caudal deeply forked and partly covered with scales ; belly with a saw-edge.



TEXT-FIG. 4.—*Hilsa ilisha* (Hamilton).

Colour : Silvery shot with gold and purple. Young fish have vague, vertical, darker bars across the back and upper part of the sides.

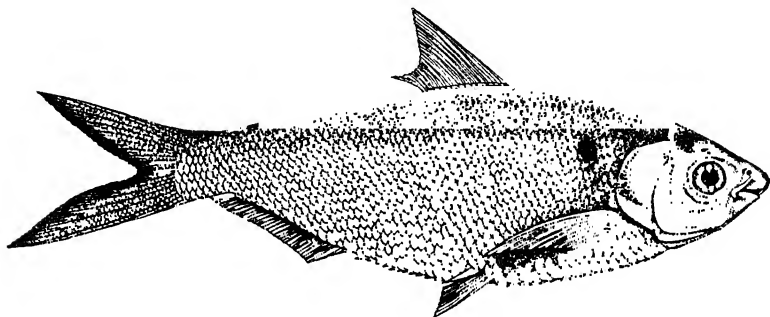
Habitat : *Hilsa* swarm up all the larger rivers of India and Burma to spawn, at the season of the local monsoon. Mature fish are mostly taken in the Ganges from mid May to mid October, when they presumably leave for the sea. We are told that fry, about two inches long, are taken in January and February. These fish mostly reach our districts by rail from Sara Ghat where a fishing fleet operates. Although *Hilsa* go upstream much farther than this (Day records them from Delhi and Hamilton Buchanan from Agra and Cawnpore) we have not heard of them from the Jalpaiguri or Darjeeling districts.

[*Gonialosa manminna* (Ham.)], *F.B.I.*, No. 489 *Chatoessus manminna*.

Bengali: *Khoira* খোয়া.

D. 14-15. P. 15. V. 8. A. 22-24. L. 1. 58-63.

Day gives—'Length of head $4\frac{2}{3}$ -5, height of body $3\frac{2}{3}$ - $3\frac{3}{4}$ into total length. *Fins*—dorsal commences slightly in advance of the origin of the pelvics, its last ray is slightly prolonged. Caudal deeply forked, lower lobe the longer. *Scales*—irregularly arranged; scutes (*i.e.* serrations along the belly) strong, 17 between throat and base of pelvics, and 13 behind it.



TEXT-FIG. 5.—*Gonialosa manminna* (Hamilton).

Colour: Silvery glossed with gold; cheeks purplish; back with a bluish-green tint, and usually a black spot on the shoulder. *Fins* yellowish, the dorsal and caudal with dark outer edges.'

Size: Day says it attains at least 11 inches.

Habitat: Day gives—'Fresh waters of Sind, and the districts watered by the Indus and its branches, also the affluents and the main streams of the Ganges, Jumna, Brahmaputra, and Mahanadi.' Our specimen was from Siliguri bazaar.

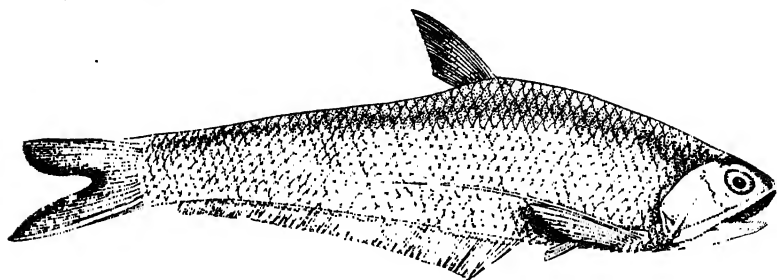
[*Engraulis telara* (Ham.)], *F.B.I.*, No. 498.

Bengali: *Phansa* ফাঙ্গা; Hindi (Bihar): *Bindi* बिन्दी.

D. 14-15. P. 15. V. 7. A. 70-80. C. 19. L. 1. 52.

Day gives—'Length of head 6-7, of body $4\frac{1}{2}$ in total length. *Eyes*—diameter $4\frac{1}{2}$ in length of head, $\frac{2}{3}$ diameter from end of snout, and $1\frac{1}{2}$ apart. The maxilla extends to opposite the gill-opening. *Fins*—origin of dorsal slightly posterior to that of anal, much nearer to snout than to base of caudal fin. Pectoral with its upper ray elongated to opposite centre of anal fin (in some examples this ray is only slightly produced), whilst the fin itself extends to opposite the posterior end of the pelvics; lower caudal lobe the longer, the upper truncated; base of the anal fin considerably more than half the total

length without the caudal fin. *Scales*—7 spiny scales before the pelvics and 15 or 16 after them.



TEXT-FIG. 6.—*Engraulis telara* (Hamilton).

Colour : Greenish along back, becoming silvery dashed with gold along the abdomen ; dorsal and caudal yellow, the upper lobe of the caudal and the upper margin of the dorsal stained black ; pectoral in the young yellowish, but in the adult of a deep blue-black, except the elongated ray, which is usually uncoloured in the posterior three-fourths ; pelvics and anal uncoloured.'

Size : Day says it attains at least 16 inches in length. Our specimen was about 5 inches long.

Habitat : Our specimen was from Siliguri bazaar. Day gives—' Orissa, Bengal, Cachar and Burma, in which latter country I have taken it as high up as Mandalay.'

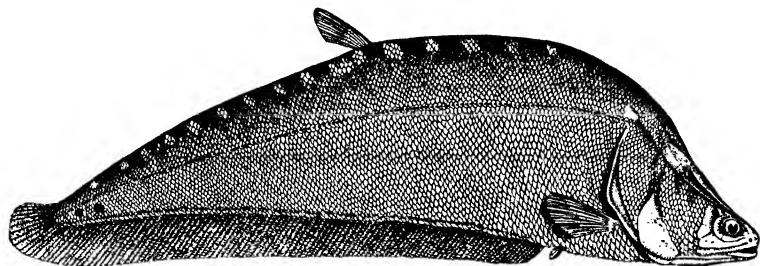
Group II.—THE FEATHER-BACKS.

[*Notopterus chitala* (Ham.)], *F.B.I.*, No. 520.

Plate 4, fig. 5.

Bengali : *Chital* চিটল ; Hindi (Bihar) : *Mohi* मोही .

D. 9-10. V. 5-6. 110-125 (135). C. 10. L. r. 225.



TEXT-FIG. 7.—*Notopterus chitala* (Hamilton).

In shape similar to *N. notopterus* but the back is more strongly humped in front and the ventral profile almost straight. There is also a more marked re-entrant curve above the eyes.

Colour : Silvery ; dark along the back. There is a series of about 15 silvery transverse bars on each side of the dorsal ridge, some meeting the corresponding marks on the other side of the ridge, others alternating with them. There are 7 or 8 round black or dark grey spots irregularly arranged near the end of the tail. The dorsal is yellowish grey, the lower fins are almost white washed with silver on the basal half.

Size : We have seen them up to about 3 ft. long. Day says they attain at least 4 feet.

Habitat : We have only seen them in bazaars where they are commonly exposed for sale. Day gives—' Fresh waters of Sind, Lower Bengal, Orissa, Assam, Burma and Siam to the Malay Archipelago.'

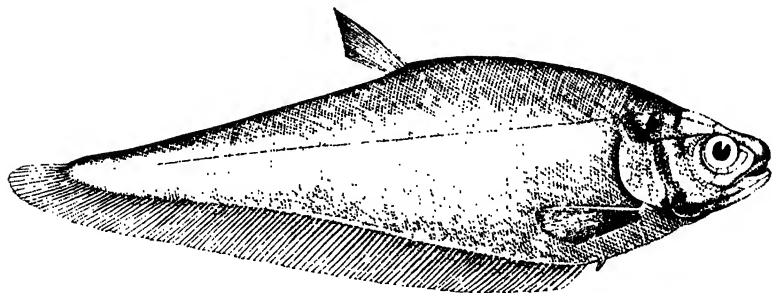
Notopterus notopterus (Pall.), *F.B.I.*, No. 519 *Notopterus kaporat*.

Plate 4, fig. 6.

Bengali : *Pholui* ফুলুই or *Phallai* ফল্লাই ; Hindi (Bihar) : *Golhi* गोलही ; Hindi : *Pholi* फोली ; Rabha : *Na-p(h)uli* Meechi : *Na-laithu*.

D. 7-8. V. 5-6. A. 100-110. C. 19. L. r. 225.

Laterally compressed, dorsal and ventral profiles both convex ; the whole appearance rendered unusual by the long anal fin which extends for more than two-thirds of the whole length of the fish and is confluent with, and almost masks, a very small caudal. The dorsal is short and the pelvics very small.



TEXT-FIG. 8.—*Notopterus notopterus* (Pallas).

Colour : Silvery ; Day mentions fine greyish spots everywhere.

Size : We have had them up to 10 inches long ; Day says they attain 2 ft. or more.

Habitat : Clear streams of the Terai and Duars. Day gives—' Fresh and brackish waters of India to the Malay Archipelago '.

Group III.—THE SNOW-TROUT.

Oreinus molesworthii Chaudhuri.

1913. *Oreinus molesworthii*, Chaudhuri, *Rec. Ind. Mus.*, VIII, p. 247, pl. vii, fig. 2.

Known as 'Snow-trout' though perhaps this name is more properly applied to *Schizothorax progastus*.

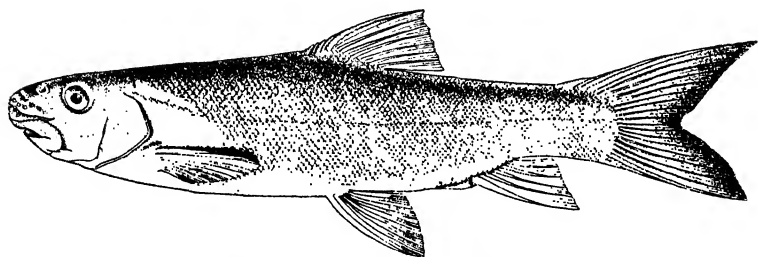
Nepalese : *Asla* असला ; Lepcha : *Moui*.

D. 3/8. P. 17. V. 10. A. 2/5. C. 19. L. 1. 98-107.
Barbels 2 pairs.

In general appearance somewhat like a trout but the mouth is inferior and the snout rounded. There is a suction disc on the chin formed by the edge of the lower lip. Some have many tubercles on the snout and an incipient groove. Length of head 6, of caudal $6\frac{3}{4}$, height of body 5 in the total length.

Barbels : Very short, usually hidden in a fold of upper lip.

Fins : Caudal deeply forked. *Scales* very small and not very evident (Shaw), those immediately behind the gill-opening and below the lateral line rudimentary (Hora, *Rec. Ind. Mus.*, XXII, p. 734, 1921). Vent and base of anal in a sheath formed of enlarged, imbricate scales.



TEXT-FIG. 9.—*Oreinus molesworthii* Chaudhuri. (Copied from *Rec. Ind. Mus.*).

Colour : Brownish-grey above indistinctly speckled with black (resembling a brown trout), silvery below ; sides often shot with gold, a pinkish-brown tinge along the lateral line. Fins pale yellowish-brown or pinkish. Iris pale golden.

Size : Our longest 10·3 inches.

Habitat : Clear hill streams up to at least 2,000 ft. (Riyang) and probably higher. Common in some streams, e.g. the upper reaches of the Balasan River. The type specimen was from the Abor hills.

Habits : Mr. Curry informs us that they will take a fly which seems strange in a fish with such a mouth.

Schizothorax progastus (McClell.), *F.B.I.*, No. 286.
The 'Snow-trout'.

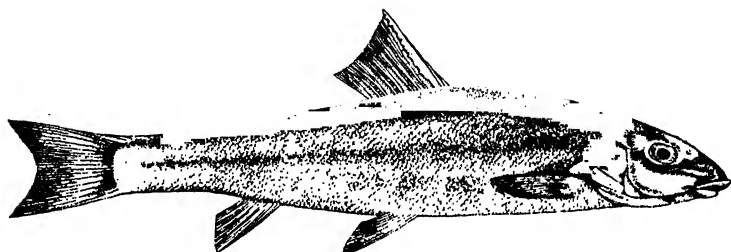
Nepalese : *Asla* अस्ला (so called in Tibet by Sherpas who presumably do not distinguish it from *Oreinus molesworthii*).

D. 3/8-10. P. 10. V. 11. A. 2/5. C. 19. L. 1. 150-190.
Barbels 2 pairs.

In general appearance it resembles *Oreinus molesworthii*, with which we at first confused it, but the mouth is rather more forward and there is no sucker on the chin.

Fins : The caudal is forked ; the dorsal has a strong, serrated, osseous ray.

Scales : Minute and not very distinct ; a tile-like row (as in *Oreinus*) on the anal sheath.



TEXT-FIG. 10.—*Schizothorax progastus* (McClelland).

Colour : Day gives—'Uniform silvery, sometimes having a few fine spots ; fins with darkish edges.' We have not had an opportunity of describing a fresh specimen.

Size : Day gives—'At least 20 inches in length.'

Habitat : Found from the headwaters of mountain streams downstream, apparently, as far as the plains ; our own specimens were probably none of them from higher than about 2,000 ft. though we have seen them taken from the Torsa at least as high as Yatang in the Chumbi valley (9,800 ft.) and it is the commonest species in the streams of the plateau of Southern Tibet at an elevation of about 14,000 ft. Day gives—'Himalayas, from the headwaters of the Ganges to Sadiya in Upper Assam. 'Common at Hardwar, where the Ganges debouches into the 'plains.'

Group IV.—THE CARPS.

KEY TO THE CYPYRIDÆ (THE CARPS) IN THIS LIST.

Abdominal edge cutting :—

Scales of moderate size (L. 1. 34-37) ..	..	<i>Laubuca</i> (p. 20)
Scales small (L. 1. 86-110) ..	..	<i>Chela</i> (p. 19)

Abdominal edge rounded :—

Dorsal begins before or opposite to front of Pelvics :

A suctorial disc on chin	<i>Garra</i> (p. 48)
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No suctorial disc on chin :—

A line of open pores across snout .. *Semiplotus* (p. 59)

Pores, if present, irregularly arranged :—

A tubercle in centre of lower jaw :—

Dorsal 15-16 rays, L. l. 40-45 .. *Cirrhitina* (p. 43)

Dorsal 10-12 rays, L. l. 35-40 .. *Crossocheilus* (p. 47)

No tubercle in centre of lower jaw :—

L. l. 71-84, leaden rather than silvery *Labeo gonius* (p. 54)

L. l. 44-47, bright silvery .. *Barbus chagunio* (p. 35)

L. l. 36-44 :—

One or two pairs barbels .. *Labeo spp.* (p. 50)

No barbels .. *Catla* (p. 44)

L. l. 34 or less *Barbus spp.* (including *Cyclocheilichthys*
and *Lissocheilus*, p. 45) (p. 33)

Dorsal begins distinctly behind front of Pelvics but does not extend above Anal :—

Opening of mouth wavy, three prominences on lower jaw fitting into corresponding notches in upper jaw *Rasbora* (p. 31)

Opening of mouth normal :—

L. l. incomplete (about 15 scales) *Amblypharyngodon* (p. 31)

L. l. complete :—

Anal 29 rays or more .. *Rohtee* (p. 58)

Anal 12 rays or less .. *Aspidoparia* (p. 32)

Dorsal begins opposite interspace between Pelvics and Anal and extends above the latter :—

Cleft of mouth deep ; blue spots or bands, if present, arranged vertically ; Dorsal 9-11 rays .. *Barilius* (and *Raiamas*) (p. 21)

Cleft of mouth shallow ; colour pattern, if present, arranged horizontally :—

Anal 12 rays or more .. *Danio* (p. 26)

Anal 8 rays .. *Esomus* (p. 29)

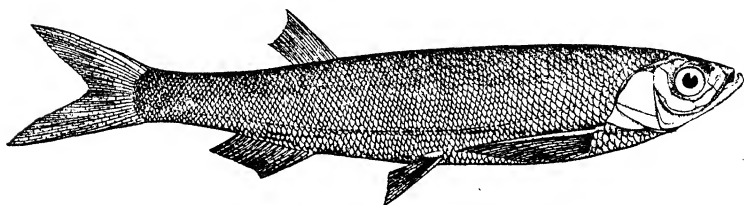
***Chela bacaila* Ham., F.B.I., No. 458.**

Plate 2, fig. 14.

The Chilwa.

Bengali : *Chela* ঢেলা ; Hindi (Bihar) : *Chilwa* चिलवा.

D. 9. A. 13-15. C. 19. L. l. 86-110.



TEXT-FIG. 11.—*Chela bacaila* Hamilton.

Somewhat compressed laterally, abdomen with a cutting edge behind the pectorals, the dorsal profile straighter than the

ventral. The lateral line is low, about three-quarters of the distance from the back to the belly. The mouth is directed upwards.

Colour : Bright silvery.

Size : Day says—‘attaining at least 7 inches.’ We have had them up to 5 inches but they are more commonly 3 or 4 inches in length.

Habitat : Streams throughout the Terai and Duars. Day gives ‘Throughout India except Malabar, Mysore and Madras and parts of the Deccan.’

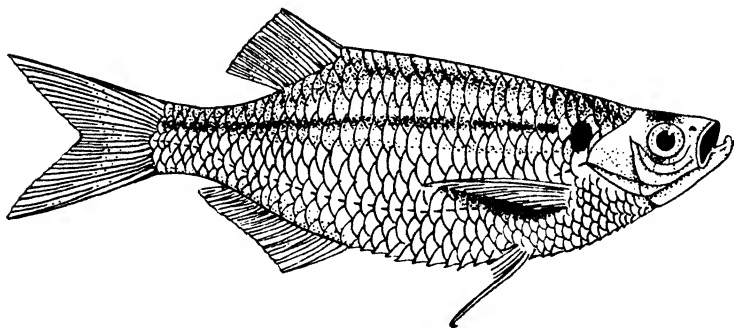
Laubuca laubuca (Ham.), *F.B.I.*, No. 447

Perilampus laubuca.

Plate 2, fig. 16.

D. 11-12. P. 13. A. 19-23. C. 19. L. 1. 34-37.

Somewhat deep and laterally compressed, abdomen with a cutting edge; mouth inclined upwards. Pelvic fins placed far forward and the dorsal far back. The lateral line is low, being more than three-quarters of the distance from the back to the belly.



TEXT-FIG. 12.—*Laubuca laubuca* (Hamilton).

Colour : Silvery; a black blotch near the base of the pectoral and sometimes another near the base of the caudal. Day mentions some yellow vertical stripes during life which we have not noticed.

Size : Day says it attains at least $3\frac{1}{2}$ inches in length. Our longest was about $2\frac{1}{2}$ inches.

Habitat : Our specimens were from the pond on the west side of the cart-road from Siliguri to Sukna immediately south of the Panchenai bridge. Day gives—‘Ganjam, Orissa, Bengal, Central India, Assam, and Burma.’

Genus : *BARILIUS*, including *Raiamas*.

This genus is best known to anglers by its one sporting member, the *Bola* (Nepalese) or 'Hill-trout' (*Barilius bola*), but they may also have had a little fish in gleaming silver and blue (*B. barna*) attempt to take a spoon of nearly his own size, or have used him, or one of his less common relatives, as dead-bait.

All are bright, silvery fish common in clear, gravelly streams where the flesh of their bodies is the only visible sign of life in the dark of deep pools. All of them, at least when young, have some trace of the characteristic vertical pattern in transparent blue.

B. barila, *B. vagra* and the young of *B. bendelisis* are the most likely to be confused.

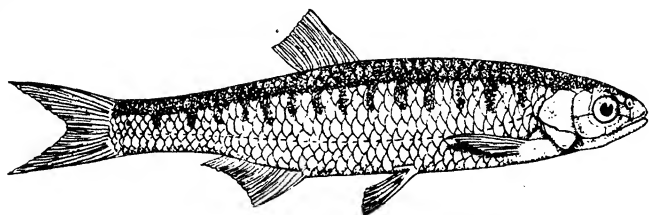
KEY TO THE SPECIES.

- L. 1. 88-94, no barbels, a salmon-like hook on the lower jaw in adults ; a double row of blue blotches *B. (Raiamas) bola* (p. 23)
 L. 1. 69-75, barbels rudimentary or none ; 2 or more rows of vertically elongated blue blotches *B. tileo* (p. 25)
 L. 1. 60-70, 2 prs. barbels ; about 12 incomplete vertical bars, usually only visible across the back *B. shacra* (p. 24)
 L. 1. 43-46, 1 pr. small barbels, A.3/10-11 ; 14-15 vertical blue bands in the middle third of the side *B. barila* (p. 21)
 L. 1. 42-44, 2 prs. barbels, A.2-3/11-12 ; 7-14 vertical blue bands, sometimes indistinct *B. vagra* (p. 26)
 L. 1. 38-43, 2 prs. barbels, A.3/7-8, P. very large in males ; A black dot at base of each scale and double dots along L. 1. in adults, bars visible across back in young *B. bendelisis* (p. 23)
 L. 1. 36-42, no barbels ; 9-10 well-marked blue bands from back almost to belly throughout life *B. barna* (p. 22)

Barilius barila Ham., *F.B.I.*, No. 427.

D. 9(2/7). P. 13. V. 9. A. 13-14(3/10-11). C. 19. L. 1. 43-46.

Barbels 1 pair (small, rostral). 'The adult has open pores on both jaws and snout. Length of head $5-5\frac{1}{2}$, height of body $5\frac{1}{4}-5\frac{1}{2}$ in total length.' (*Day*)



TEXT-FIG. 13.—*Barilius barila* Hamilton.

Colour : 'Silvery, with 14 or 15 vertical blue bands in the middle third of the side of the fish.' (*Day*)

Size : 'Grows to 4 inches in length.' (*Day*) Our longest is $4\frac{1}{2}$ inches.

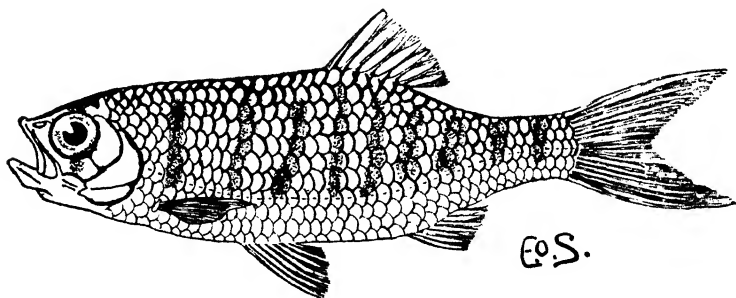
Habitat: Five of the specimens from our collection were identified as belonging to this species by Dr. Hora. At least one was from the Mahanadi River. Day gives—'Delhi, North-West and Central Provinces, Bengal, Orissa, and Lower Assam.' It is also found in Burma, see Mukerji, *Bombay Nat. Hist. Soc. Journal*, XXXVII, 1st. part (1934).

***Barilius barna* Ham., *F.B.I.*, No. 431.**

Bengali: *Bhola* ভোলা or *Ghol* গোল; Nepalese: *Puti* पूटी, or *Fakatar* फकतर; Hindi (Bihar): *Darangni* दरंगनी; Mechi: *Namusha*; Rabha: *Na-korte*.

D. 9(2/7). P. 15. V. 9. A. 13-14(3/10-11). C. 19. L. 1. 36-42. No barbels.

A deeper fish and more strongly compressed laterally than our other species of *Barilius*. There is also a tendency for the dorsal outline to be straighter than the ventral, and the mouth is directed slightly upwards. The adult has open pores on both jaws and snout. Length of head $4\frac{3}{4}$ - $5\frac{1}{4}$, height of body $3\frac{1}{2}$ -4 in total length.



TEXT-FIG. 14.—*Barilius barna* Hamilton.

Colour: Silvery with 9-11 well-marked bluish vertical bands, the first of which sometimes passes through the eye. Fins yellow, dorsal, caudal, and anal usually tinged with red. 'The young have the back grey, the sides silvery shot with gold, and from 7-9 deep blue vertical bands. Fins yellow, the dorsal and caudal stained externally with black.' (Day)

Size: Day gives—'Five inches or more' and we have had them up to about this size.

Habitat: Clear streams and even large rivers of the Terai and Duars, found in borrow-pits in the rains; very common. Day gives—'Assam, the Ganges and its branches, Bengal, and Orissa.' Also found in Burma, see Mukerji, *Bombay Nat. Hist. Soc. Journal*, XXXVII, 1st part (1934).

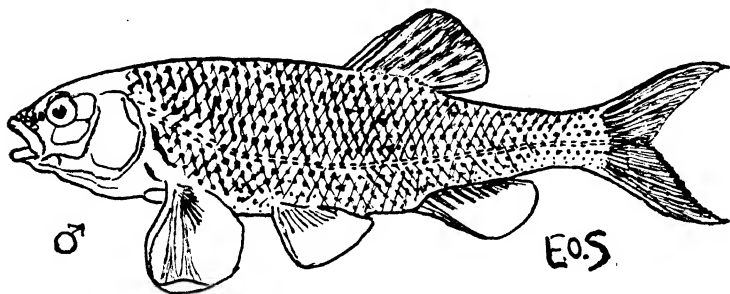
Habits: A voracious little fish, often taking a fly and even a spoon.

Barilius bendelisis var. **chedra** Ham., *F.B.I.*, No. 426.

Bengali: *Joia* জোয়া; Mechi: *Elengi*; Rabha: *Na-pagli*; Nepalese: *Guderi* गुदेरी.

D. 9(2/7). P. 15. V. 9. A. 9-10(2-3/7-8). C. 18. L. 1. 38-43. Barbels 2 pairs (minute). Rostral pair occasionally absent.

Shape normal, a sporting looking fish with beautiful lines. Hard rough pores above the mouth. Adult males have the pectorals very large and strong so that they might almost be taken for a different species. Length of head $4\frac{3}{8}$ - $5\frac{3}{4}$, height of body $4\frac{1}{4}$ - $4\frac{3}{4}$ (to $5\frac{3}{4}$ in the young) in total length.



TEXT-FIG. 15.—*Barilius bendelisis* var. *chedra* Hamilton.

Colour : Silvery with a black spot at the base of each scale and double spots on the lateral line. Day says that the spots are not present in the young, we have not noticed this though in some fish, irrespective of size, they may be very indistinct. Young fish have faint transverse blue-black bars across the back. A lemon-yellow wash on the opercle and black marks behind the gill openings. Fins yellow, pectorals, pelvics and anal tinged with orange, the hinder margin of the lower lobe of caudal black-edged.

Size : Day gives—'attains at least 6 inches' and we have had them up to about this size.

Habitat : Clear gravelly streams in the Terai and Duars. Day gives—'Assam and Himalayas, through the continent of India as far as the Western Ghats, not recorded from the coast of Malabar or Canara nor from Sind. Found also in Ceylon.'

Habits : 'The ova of this species are large; I found the fish breeding at Cuttack in the month of November.'

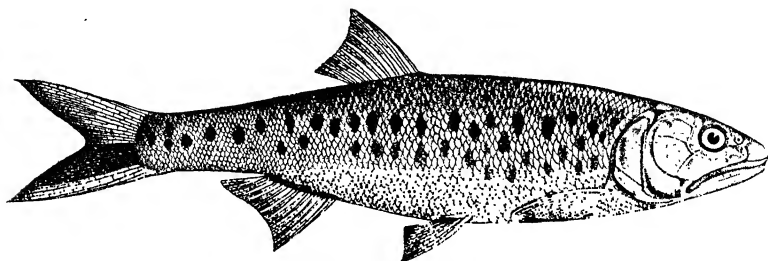
Barilius (Raiamas) bola Ham., *F.B.I.*, No. 435.

The 'Hill-trout.'

Bengali: *Bhola* (?) ভোলা; Nepalese: *Bhola* भोला; Mechi: *Nalaida*.

D. 10-11(3/7-8). P. 13. V. 9. A. 13(3/10). C. 19. L. 1. 88-94. No barbels.

Shape normal or rather slender. A well-developed knob on the symphysis of the lower jaw gives the deeply-cleft mouth a salmon-like appearance. Length of head $4\frac{1}{4}$ - $4\frac{2}{3}$, height of body 5-6 in total length.



TEXT-FIG. 16.—*Barilius (Raiamas) bola* Hamilton.

Colour: 'Silvery, with two or more rows of vertical bluish blotches along the sides, the upper row with 12-20 blotches, and the lower intermediate; some spots also on the head. Lower half of the dorsal fin slightly grey. Caudal orange, stained with grey and black. Pectorals, pelvics and anal orange, the colours being somewhat similar to those of a trout.' (*Day*)

Size: Day gives—'Attaining at least a foot in length; one killed in Assam by Mr. Hannay is stated to have weighted 5 pounds.' We have seen them up to a foot but nothing to approach Mr. Hannay's fish.

Habitat: Clear streams and rivers of the Terai and Duars appearing to be more plentiful towards the east of our area. Day gives—'Orissa, Bengal, North-West Provinces, Assam, and Burma.'

Habits: A very game fish taking both fly and spoon well. They are most frequently caught at a junction.

Barilius shacra Ham., *F.B.I.*, No. 425.

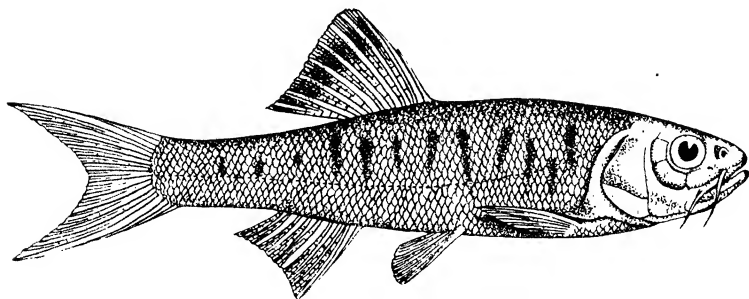
Plate 2, fig. 4.

Bengali: *Koksa* কক্সা; Mechi: *Na-boma*. (These names may refer to *B. vagra*).

D. 9(2/7). P. 15. V. 8. A. 10(2/8). C. 19. L. 1. 60-70. Barbels 2 pairs.

Much the same shape as *B. vagra*, which it somewhat resembles except for the much smaller scales. Maxillary barbels as long as the eye, rostral pair slightly longer. Length of head $5\text{-}5\frac{1}{4}$, height of body $5\text{-}5\frac{1}{2}$ in total length.

Colour: 'Back olive, rest of the body pinkish silvery; about 12 incomplete bars from the back downwards towards the lateral line, a dark bar along upper third of the dorsal fin. The lower $\frac{2}{3}$ of the vertical fins stained in some examples.' (*Day*)



TEXT-FIG. 17.—*Barilius shacra* Hamilton.

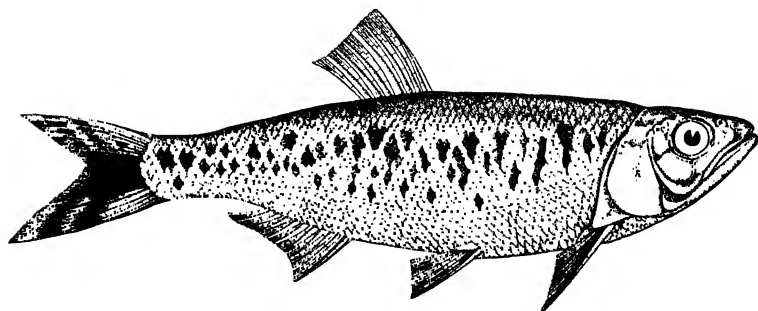
Size: 'It is said to attain 5 inches in length.' Our specimens have been smaller.

Habitat: Clear streams of the Terai and Duars, not common. *Day* gives—'From Hurdwar down the valley of the Ganges, North-West Provinces, and Assam.'

***Barilius tileo* Ham., *F.B.I.*, No. 433.**

D. 9(2/7). P. 14. V. 9 A. 13(3/10). C. 20. L. 1. 69-75. Barbels rudimentary or entirely absent.

'Abdominal profile more convex than the dorsal. Head compressed, snout pointed. Length of head $4\frac{3}{4}$ - $5\frac{1}{4}$, height of body $4\frac{2}{3}$ in the total length.' (*Day*)



TEXT-FIG. 18.—*Barilius tileo* Hamilton.

Colour: 'Bluish along the back, becoming silvery on the sides and beneath; two or more rows of blue spots and blotches, having a vertical character, along the sides. Dorsal and

caudal fins dark grey, with a light pinkish edge; the other fins yellowish.' (*Day*)

Size: *Day* gives 'at least 5 inches in length.' Our largest specimen measured 5-6 inches.

Habitat: Our three specimens were obtained by Mr. C. M. Inglis at Chilapata, Central Duars. *Day* gives—'Bengal and Assam.'

***Barilius vagra* Ham., *F.B.I.*, No. 422.**

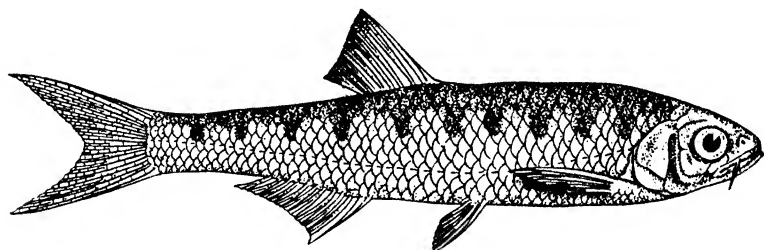
Plate 2, fig. 10.

Bengali: *Koksa* কক্সা; Mechi: *Na-boma*. (These names may refer to *B. shacra*.)

D. 9(2/7). P. 16. V. 9. A. 13-15(2-3/11-12). C. 19. L. 1. 42-44. Barbels 2 pairs.

Shape normal or rather slender. Lower jaw slightly the longer and, in adults, covered with large pores. Rostral barbels nearly half as long as the head, maxillary pair very short.

Length of head 5-6½, height of body 5-6 in total length.



TEXT-FIG. 19.—*Barilius vagra* Hamilton.

Colour: Silvery with a series of 7 to 14 blue vertical bands, sometimes indistinct, between the dorsal ridge and lateral line. Fins yellowish, edge of caudal stained grey.

Size: *Day* gives—'attains above 5 inches'. Our specimens were smaller.

Habitat: Clear streams of the Terai and Duars, not very common. *Day* gives—'Sind hills, rivers in the Himalayas and sub-Himalayan range, Jumna and Ganges, also the Punjab, Assam, and Ceylon.'

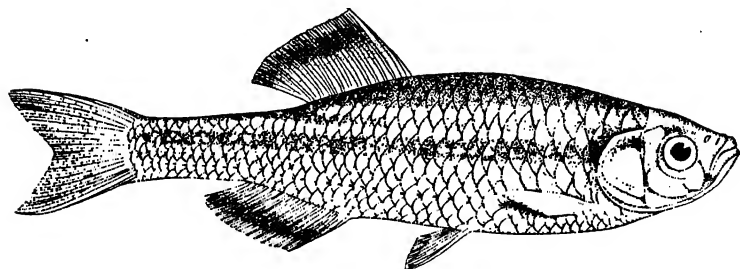
***Danio æquipinnatus* (McClell.), *F.B.I.*, No. 439.**

Plate 2, fig. 15.

Bengali: *Chebli* ছেবলী; Nepalese: *Bhiti* भिती.

D. 12-16. V. 8. A. 14-18. C. 19-20. L. 1. 32-36. Barbels 2 pairs (maxillary pair minute).

Shape similar to that of *D. devario* but not so deep. Length of head 5, height of body $3\frac{3}{4}$ – $4\frac{1}{2}$ in total length.



TEXT-FIG. 20.—*Danio aequipinnatus* (McClelland).

Colour: A beautiful silvery fish with blue and orange iridescence on horizontal bands. Fins yellow. 'Dorsal and anal fins each with a broad bluish band along their outer half. In some specimens there is a dark mark behind the gill-opening.'
(Day)

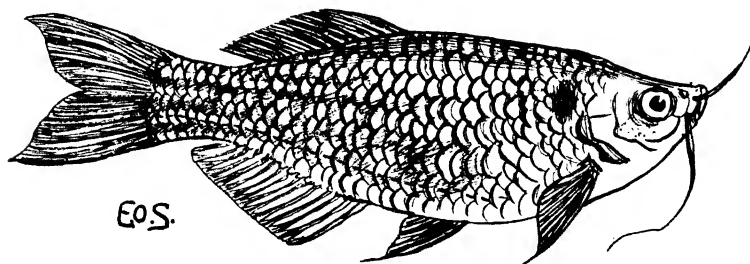
Size: Attains about 5 inches.

Habitat: Clear waters in the Terai and Duars where it is common, also all streams in the hills up to 3,000 ft. Day gives—'Himalayas of Darjeeling and the whole of the Assam District as high as Sadiya, the Naga and Garo Hills, Tenasserim and the Deccan.'

***Danio dangila* Ham., F.B.I., No. 440.**

Bengali: *Nipati* নিপাতি; Mechi: *Laupati*; Rabha: *Na-pa(t)-paru*; Chota-Nagpuri: *Durwa* दुरवा.

D. 11–13. P. 13. V. 7–8. A. 16–18. C. 20. L. 1. 38.
Barbels 2 pairs.



TEXT-FIG. 21.—*Danio dangila* Hamilton.

Shape intermediate between that of *D. devario* and *D. aequipinnatus*. Rostral barbels a little shorter than the head, maxillary pair slightly longer. Length of head 5, height of body $3\frac{1}{2}$ –4 in total length.

Colour: Silvery with three parallel longitudinal blue or dark lines running from somewhere behind mid-body to half way along the tail. A black spot behind the gills.

Size: Day gives—'grows to 5 or 6 inches.' We have not had them quite so large.

Habitat: Clear streams of the Terai and Duars. Day gives—'Bengal, Bihar, Himalayas at Darjeeling, also the hills above Akyab.'

Habits: Lives longer in stale water than any fish except *Ophicephalus*.

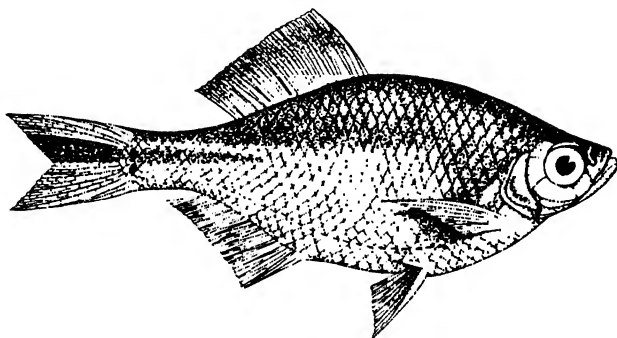
Danio devario Ham., *F.B.I.*, No. 436.

Plate 2, fig. 5.

Bengali: *Baṅs-pata*¹ বাঁশপাতা; Mechi: *Laupati*.

D. 18-19. A. 18-19. C. 19. L. 1. 41-48. No barbels.

Very deep and laterally compressed; the dorsal fin is set far back. The head is rather small. Length of head 5-5½, height of body 3-4 in total length.



TEXT-FIG. 22.—*Danio devario* Hamilton.

Colour: Silvery with one bluish band of iridescence roughly following the lateral line from a point opposite the front of the dorsal to the end of the caudal. The colour is most marked on the tail and caudal. There are sometimes a pair of fainter blue bands, one above and one below that already described on the hinder part of the body and separated from it by golden colour. The post-orbital plates strikingly silvery. Day gives—'Greenish above, silvery white below. The anterior part of the body is reticulated in its centre by steel-blue lines, divided from one another by vertical yellow bands. Three bluish lines, divided by yellow ones, are continued backwards to the caudal fin, where

¹ This name is applied in S. Bengal to *Cynoglossidae*.

the two lower amalgamate, and, passing upwards, become lost in the superior half of the fin.'

Size: Day gives—'attaining 4 inches in length.' We have had them about this size.

Habitat: Clear streams of the Terai and Duars. Day gives—'Sind, Orissa, Bengal, North-West Provinces, Deccan, Punjab, and Assam.'

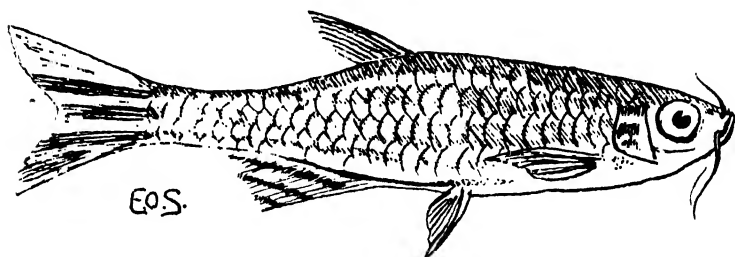
Danio (Brachydanio) rerio Ham., *F.B.I.*, No. 443.

The Zebra-fish of aquarists.

Bengali (Siliguri): *Anju* আঁজু.

D. 9(2/7). A. 15-16(2-3/12-13). C. 19. L. 1. 26-28. Barbels 2 pairs.

Shape normal. Rostral barbels short, maxillary pair reaching end of opercle. Length of head $5-5\frac{3}{4}$, height of body $4\frac{2}{3}-5\frac{1}{4}$ in total length.



TEXT-FIG. 23.—*Danio (Brachydanio) rerio* Hamilton.

Colour: Four metallic blue longitudinal bands separated by three narrow silver ones. The three lower blue bands produced along the caudal fin. Anal with three blue bands.

Size: Day gives—'about 2 inches.' Our longest measured $1\frac{1}{4}$ inches.

Habitat: Edges of streams and ditches in the Terai. Day gives—'Bengal, and as low down the Coromandel coast as Masulipatam.' Also found in Burma, see Mukerji, *Bombay Nat. Hist. Soc. Journal*, XXXVII, 1st. part (1934).

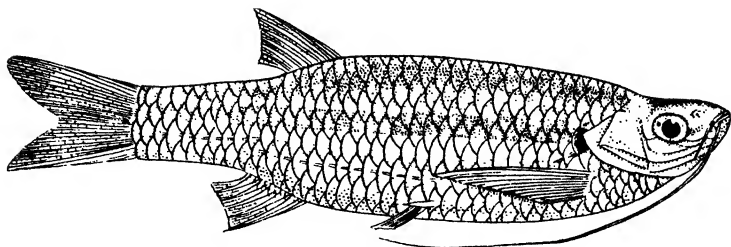
Esomus danricus (Ham.), *F.B.I.*, No. 409 *Nuria danrica*.

Bengali (local): *Dadhikha* দাধিকা (Lower Bengal) *Danrika* দাড়িকা; Rabha: *Daranki*.

D. 8(2/6). P. 15. V. 9. A. 8(3/5). L. 1. 30-34. Barbels 2 pairs.

Shape normal. Abdomen rounded. Mouth narrow, directed obliquely upwards. The longest barbels (maxillary) reach to the pelvics. Dorsal situated far back, nearer to the caudal than

to the head. Length of head $5\frac{1}{4}$ - $5\frac{1}{2}$, height of body 5 in total length.



TEXT-FIG. 24.—*Esomus danricus* (Hamilton).

Colour : Silvery ; a broad black lateral band, sometimes absent.

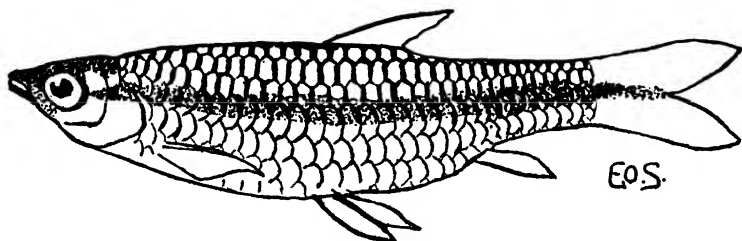
Size : Day gives 5 inches ; our specimens have been smaller.

Habitat : The smallest streams, ponds, and ditches. Common during the rains in ditches in the forest. Day gives—'India, Ceylon, Burma, and the Nicobars.'

Habits : Day gives—'Dr. Cumberland found this fish in a hot stream of 112 degrees Far. at Pooree. (M. Regnaud in a hot stream at Cannia in Ceylon.)'¹

***Rasbora daniconius* (Ham.), F.B.I., No. 411.**

Bengali (local) : *Dadhikha* দাধিখা, or *Dankoni* দানকনি, or *Dhera* ধেরা, (South Bergal) *Darkina* দারকিনা ; Mechi : *Dandikha* ; Rabha : *Daranki*.



TEXT-FIG. 25.—*Rasbora daniconius* (Hamilton).

D. 9(2/7). P. 15. V. 9. A. 7(2/5). C. 19. L. 1. 30-34. No barbels.

Shape normal or slender. The opening of the mouth is undulating (as described under *R. elanga*).

¹ Note.—The fish found by M. Regnaud have since been referred to *Esomus thermoicus*.

Colour: Silvery with a dark brown band along the lateral line from snout to tail. Head 5; height of body 5 in total length.

Size: Day gives—‘attaining 8 inches in length.’ Our longest specimen was about 6 inches.

Habitat: Clear but slow streams in the Terai and Duars. Day gives—‘Continent of India, Ceylon, Burma, Malaya Archipelago, and Zanzibar.’

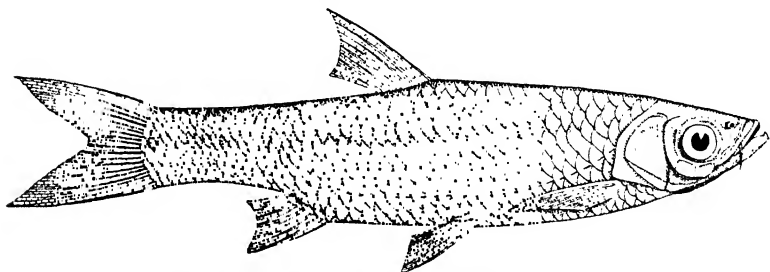
[*Rasbora elanga* (Ham.)], *F.B.I.*, No. 410.

Plate 2, fig. 13.

D. 9(2/7). P. 15. V. 8-9. A. 7(2/5). C. 19. L. 1. 40-44. Barbels 1 pair.

Shape normal. Abdomen rounded. Cleft of mouth oblique, lower jaw, having one central and two lateral prominences fitting into corresponding emarginations in the upper jaw; this gives the mouth a wavy opening when viewed from the front.

One short rostral pair of barbels. Caudal forked. Length of head $5\frac{1}{2}$; height of body $4\frac{1}{2}$ -5 in total length.



TEXT-FIG. 26.—*Rasbora elanga* (Hamilton).

Colour: Silvery, with sometimes a leaden-coloured band along the upper portion of the side.

Size: Day gives—‘attaining at least 8 inches.’ Our only specimen was about 6 inches long.

Habitat: Our only specimen was from Siliguri bazaar. Day gives—‘Bengal, Assam, and Burma.’

Amblypharyngodon mola (Ham.), *F.B.I.*, No. 335.

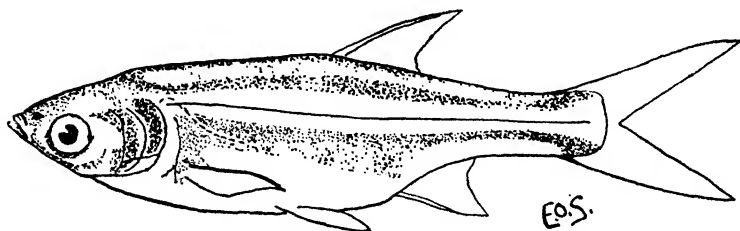
Plate 5, fig. 4.

Bengali (local): *Mowa* মউরা, or *Mowka* মউকা (in Southern Bengal); *Mowrala* মউরলা; Rabha: *Elenga*.

D. 2/7. P. 15. V. 9. A. 2/5. C. 19. L. 1. 65-75. Barbels nil.

Mouth anterior cleft to within a short distance of a vertical line drawn through anterior edge of orbit. Body moderately compressed. Eyes rather large $3-3\frac{1}{2}$ ($3\frac{1}{2}-4$ Day) in the length of head. In our specimens there are two lateral lines an upper one complete and a lower, crooked but more distinct one extending for about 15 scales from gill opening. Length of head $4\frac{1}{4}-5$, of caudal $4\frac{1}{2}$ (5 Day), height of body $4-4\frac{1}{4}$ in the total length.

Fins: Caudal deeply forked, lobes pointed. Dorsal commences behind the pelvics and extends nearly to above anal. *Scales* minute.



TEXT-FIG. 27.—*Amblypharyngodon mola* (Hamilton).

Colour: Greyish with a silvery longitudinal band about $\frac{1}{4}$ of body in depth extending along the upper lateral line from the gill-covers to the base of the caudal. The whole body covered with minute black dots.

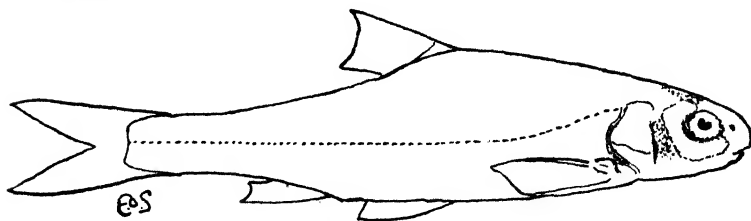
Size: Our longest $2\frac{1}{2}$ inches.

Habitat: Streams and borrow-pits in the Terai and Duars. Day gives—'From Sind throughout India (except the Malabar Coast), Assam, and Burma.'

Aspidoparia jaya (Ham.), *F.B.I.*, No. 414.

Plate 2, fig. 8.

D. 9(2/7). P. 15. V. 8. A. 9(2/7). C. 21. L. 1. 52-60. No barbels.



TEXT-FIG. 28.—*Aspidoparia jaya* (Hamilton).

Shape normal; abdomen rounded. Mouth considerably overhung by the blunt snout. Length of head $5-5\frac{1}{2}$, height of body 5 in total length.

Colour : Silvery.

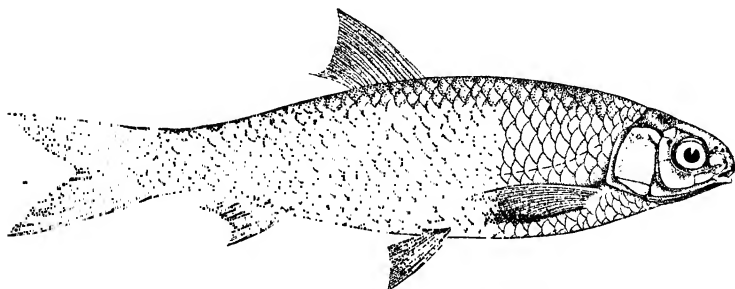
Size : The length of our only specimen was 4 inches.

Habitat : Our only specimen was from the Malangi river, Central Duars. Day gives—'Hardwar on the Ganges and Assam.'

***Aspidoparia morar* (Ham.), *F.B.I.*, No. 413.**

D. 9-10(2-3/7-8). P. 15. V. 8. A. 10-12(2/8-10). C. 19. L. 1. 38-42. No barbels.

Shape normal; abdomen rounded; mouth small, inferior, the lower jaw having a sharp crescentic edge destitute of lip. Snout very obtuse. Length of head $5-5\frac{3}{4}$, height of body $4-5\frac{1}{2}$ in total length.



TEXT-FIG. 29.—*Aspidoparia morar* (Hamilton).

Colour : 'Back light brown, divided from the silvery side by a burnished streak.' (*Day*)

Size : Day gives—'attaining at least 7 inches in length'. Our specimens have been very much smaller.

Habitat : Borrow-pits on road-sides in the Terai. Day gives—'Sind, Punjab, Continent of India (except the Western Coast, and localities south of the Kistna River), also Assam and Burma.'

Genus BARBUS, including *Cyclocheilichthys* and *Lissocheilus*.

These fishes, which include the *Katli* and *Mahseer*, are strongly built with large scales which are metallic on their outer edges and dark at the base (in the last column of the table below an attempt has been made to describe their colours).

B. chagunio and *B. sarana* are easily distinguished by the count of lateral line. Of the rest *B. (Lissocheilus) dukai* and *B. putitora* (*Katli* and *Mahseer*) are large but, even in their young stages, marked by their comparative slenderness (the length of the body is always more than 4 times its depth). The remainder are all small fish (5 inches long or less) with 2 black marks on the

lateral line, a small one near the gill-opening and a large one on the tail. [In *B. stigma* these marks are sometimes missing and our specimens of *B. (Cyclocheilichthys) ? apogon* had no marks.]

Species.	L. 1.	Barbels.	Spots on L. 1.	Length Depth.	Dorsal spine.	Colour of scales.
<i>B. chagunio</i> (p. 35).	42-47 on all scales.	2 pr.	none	4-4½	strong, serrate.	silver and black.
<i>B. sarana</i> (p. 41).	32-34 on all scales.	2 pr.	only in young.	3½-3¾	strong, serrate.	silver and black.
<i>B. (Lissocheilus) dukai</i> (p. 37)	25-26 on all scales.	2 pr.	none	4½	strong, smooth.	copper and green.
<i>B. putitora</i> (p. 39).	25-27 on all scales.	2 pr.	none	5½ (4½ young).	strong, smooth.	gold and green.
<i>B. titius</i> (p. 44).	24-26 on all scales.	1 pr.	tail and gills.	3-3¾	strong, smooth.	silver and black.
<i>B. conchoniuis</i> (p. 36)	24-26 on 8-10 scales.	none	tail only.	2¾	strong, serrate.	silver and black.
<i>B. ticto</i> (p. 43)	23-26 on 6-8 scales.	none	tail and gills.	3-3½	strong, serrate.	silver and black.
<i>B. phutunio</i> (p. 39).	20-23 on 3-4 scales.	none	streaks	3-3¾	strong, serrate.	reddish.
<i>B. stigma</i> (p. 42).	23-26 on all scales.	none	usually tail and gills.	3½-3¾	weak.	silver and green.
<i>B. (Cyclocheilichthys) apogon (?)</i> (p. 34).	21, on all (?) scales.	none	none	3½	strong, smooth.	silver and black.

Barbus (Cyclocheilichthys) ? apogon (Cuv. and Val.), *F.B.I.*,
No. 387 *Barbus apogon*.

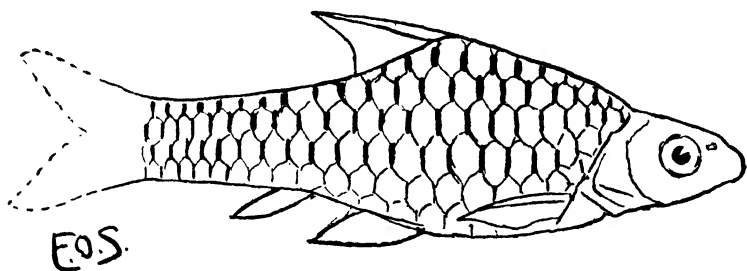
D. 4/8. P. 17. V. 10. A. 3/5. C. 19. L. 1. 21. Barbels nil.

A single very imperfect specimen from the Terai has been identified by the Indian Museum as '*Cyclocheilichthys* probably *apogon*'. Our specimen does not agree well with *C. apogon* in the count of the lateral line which, though badly marked, was certainly not 36-37 as given for this species by Day.

We have also a note of a specimen from the Sivoke about 1920 which we cannot now find in our collection. This seems to agree to some extent with the above. The description reads : 'D. 2/8. P. about 10. V. 9. A. 7. C. 19. L. 1. 22. Barbels nil.'

A small fish like a *Barbus*. Length of head 4, depth of body $3\frac{1}{2}$ into the total length.

Fins : All dorsal rays weak and not serrated. One dorsal ray very long, $\frac{1}{3}$ rd of total length of fish. (This was not so in the other specimen).¹



TEXT-FIG. 30.—*Barbus* (*Cyclocheilichthys*) ? *apogon* (Cuvier & Valenciennes).

Colour : Silvery, a black spot nearer the tail than in *B. conchoni*, another fainter but larger one behind the shoulder. Top of the orbit black. *Fins*—top half of dorsal black, anal orange.'

Barbus chagunio (Ham.), *F.B.I.*, No. 339.

Plate 5, fig. 3.

Synonym :—*B. chagunio* var. *spilopholus* (referring to males) Day's *Fishes of India*. See Hora and Mukerji in *Journal of the Asiatic Society of Bengal* (N.S.), XXVII, p. 137.

Hindi : *Utta उता* ; Meechi : *Dauka* ; Cheta-Nagpuri : *Hilsaputi हिलसा-पुटी*.

D. 3/8. P. 15. V. 9. A. 3/5. C. 19. L. 1. 44-47. Barbels 2 pairs.

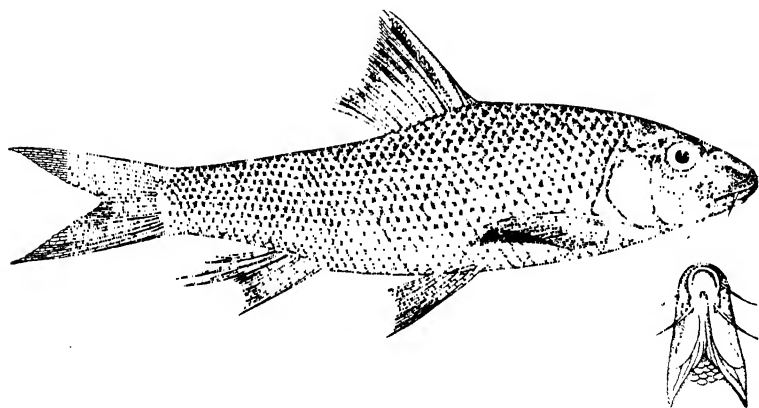
Upper profile in front of dorsal more arched than lower ; snout bold, covered with sunken pores more strongly marked and sharply defined in the male. Length of head $4\frac{1}{2}$ -5, of caudal $4\frac{1}{2}$ -5, height of body $4\frac{1}{2}$.

Barbels : Rather longer than the orbit.

¹ Note.—The lengthened dorsal ray was presumably a freak such as sometimes occurs in fishes. Dr. Hora notes that this is usually a secondary sexual character of the males and that elongation of rays occurs in quite a number of species.

Fins: Last undivided dorsal ray osseous, strong with coarse teeth. Some of the last few anal rays elongated in the male.

Colour: Silvery with a faint pinkish tinge; a black spot, at the base of each scale on the upper three-quarters of the body. Fins yellowish, dorsal and caudal with a suffused sub-marginal band of red touched with black. Pelvics and anal tinged with red. The male is more brilliant throughout and the black fin tips more marked.



TEXT-FIG. 31.—*Barbus chagunio* (Hamilton). Male.

Size: We have taken them up to a foot in length. Day says they attain at least 18 inches.

Habitat: Clear streams and rivers in the foot-hills, Terai and Duars. Day gives—'From Orissa, throughout Bengal, Assam, Bihar, and the N.W. Provinces to the Punjab but not recorded from Sind, the Deccan, Western Coast, Mysore, Madras, or Burma.'

Habits: It has been taken on a fly in the Balasan by casting downstream over a boulder into the pool below.

***Barbus conchoni* (Ham.), F.B.I., No. 389.**

Plate 5, fig. 13.

Bengali: *Kanchan-punti* কান্ধন-পুন্ডি.

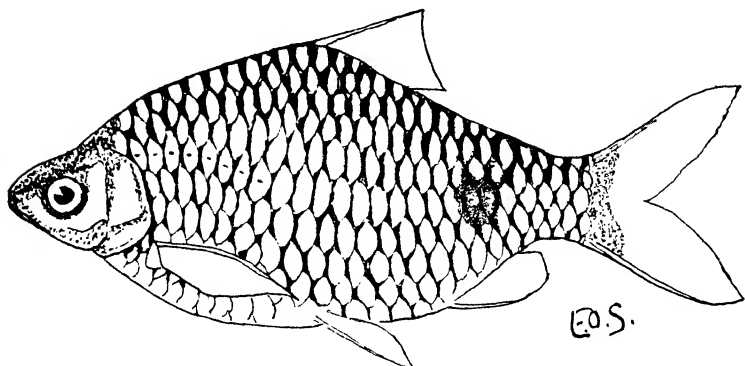
D. 3/8. P. 11. V. 9. A. 2/5. C. 19. L. 1. 24-26. Barbels nil.

Deeper and flatter than any other of our species of *Barbus*. The lateral-line ceases after 8-10 scales. Length of head $4\frac{1}{2}$ -5, of caudal $4\frac{1}{2}$, height of body $2\frac{3}{4}$ times in the total length.

Fins: Dorsal spine osseous and serrated.

Colour: Silvery, darker along the back and all scales with dark bases. A rounded black spot, diffused in young specimens

occupies about 19 and 20 of the lateral line. Fins transparent grey or pale yellow; pelvics and anal sometimes tinged with red or orange and sometimes dark. Upper lobe of caudal sometimes dark, the lower, or sometimes the whole reddish or orange. Iris golden or coppery. Day says—'opercles lake colour', we have never seen this.



TEXT-FIG. 32.—*Barbus conchoniuis* (Hamilton).

Size: Our longest $3\frac{1}{2}$ inches. Day says—'attaining at least 5 inches in length'.

Habitat: Very common in all clear streams below 2,000 ft. Day gives—'Assam, Lower Bengal, Orissa, Bihar, N.W. Provinces, Punjab, and the Deccan.'

***Barbus (Lissocheilus) dukai* Day, *F.B.I.*, No. 352.**

Plate 5, fig. 6.

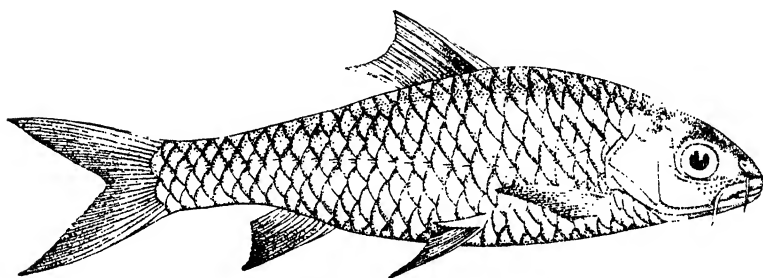
Note.—This fish, so well known to anglers in Northern Bengal under its Nepalese name, *Katli*, has hitherto been identified with *B. hexastichus*. As Day, in his *Fishes of India*, records that Dr. Duka took the type and several other specimens of *B. dukai*, from the Tista river it seemed strange that we had never come across this latter species. On turning up Day's figure of this, drawn from Dr. Duka's largest specimen, we were surprised to find a perfect and unmistakeable likeness of a small (7 inch) *katli*. This illustration, moreover, shows 26 scales on the lateral line, thus agreeing with our *katli* but not with Day's own text which gives 28-29 for *B. dukai*. This latter number appears to be an error by Day which he has repeated in his *Fauna of British India* volume. One of us has since examined all specimens of *B. hexastichus* and *B. dukai* in the British Museum but found the two series not easy to distinguish.

Assuming them to be distinct we think that no one familiar with the *katli* who examines Day's plates of *B. dukai* and *B. hexastichus* will doubt that Dr. Duka's fish were *katli*.

Bengali : *Bhorkol* ভর্কল or *Buluk* বুলুক ; Nepalese : *Katli* कतली ; Lepcha : *Mirpunja* ; Mechi : *Kantasi* ; Assamese : *Boka* (this may refer to *B. hexagonolepis*).

D. 3-4/9. P. 17. V. 9. A. 2/5. C. 19. L. 1. 25-26.¹
Barbels 2 pairs.

In general appearance somewhat like *B. tor* but deeper, copper-coloured rather than golden, including the eye, with slate coloured, instead of yellow, fins. The positive distinction is in the presence of a double or treble row of even-sized pores below the eye. Length of head 5-5½, of caudal 4½-5, height of body 4½ in the total length.



TEXT-FIG. 33.—*Barbus (Lissocheilus) dukai* Day.

Colour : Olive green on back ; each scale above the lateral line copper-coloured at the edge deepening to bronze-green at the base. Below the lateral line the scales are pale slate-coloured fading to pure white on the belly. Fins deep slate-colour paling towards their margins. Iris bright coppery red.

Size : Rarely, if ever, exceeding 10 lb. in our area, but W. Nelson records a *Katli* of 25 lb. caught by him in the Champamoti near Gorubasha (Assam).

Habitat : In all rivers and clear streams in the foot-hills, Terai and Duars. Day gives—'Tista River, Darjeeling whence Dr. Duka sent me several examples.'

Habits : Very similar to those of the Mahseer. As a sporting fish there is nothing to chose between them, weight for weight. It is unfortunate that, as both take the same lures, and are found in the same water, the smaller species is often taken on much too heavy tackle which does not give him a chance to show his power.

¹ One specimen in the British Museum, L. 1. 28 on one side and 25 on the other.

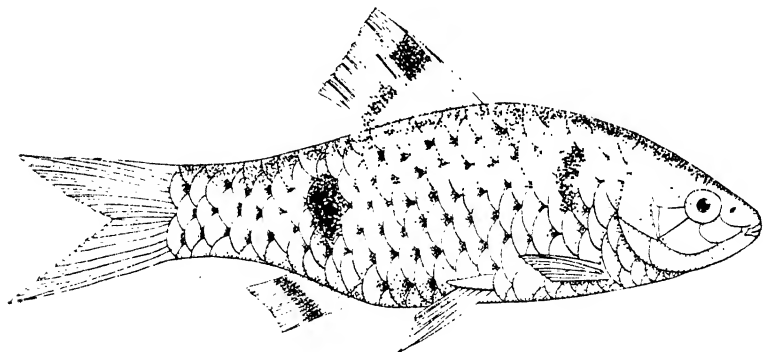
Barbus phutunio (Ham.), *F.B.I.*, No. 394.

Bengali : *Phutuni-punti* ফুটুনি-পুন্টি.

D. 2-3/8. P. 15. V. 9. A. 3/5. C. 19. L. 1. 20-23. Barbels nil.

Very like a small *B. conchoni*us. The lateral line only extends for 3 or 4 scales from the gills. Day gives—'Length of head 4-4 $\frac{2}{3}$, of caudal 4, height of body 3-3 $\frac{1}{4}$ in the total length.'

Fins : Dorsal spine serrate.



TEXT-FIG. 34.—*Barbus phutunio* (Hamilton). Greatly enlarged.

Colour : Dirty white (reddish-brown *Day*) with two vertically elongated dark spots, one from the back to the base of the pectoral and another from the back to the base of the anal. According to Day, these grow shorter with age. There is an ill-defined dark band on the dorsal.

Size : Our longest 1 inch. Day says—'attaining 3 inches'.

Habitat : Ours from the Panchenai River (Terai). Day gives—'Ganjam, Orissa and through Bengal and Burma.'

Barbus putitora* (Ham.), *F.B.I.*, No. 353 *Barbus tor*, in part.

The Mahseer.

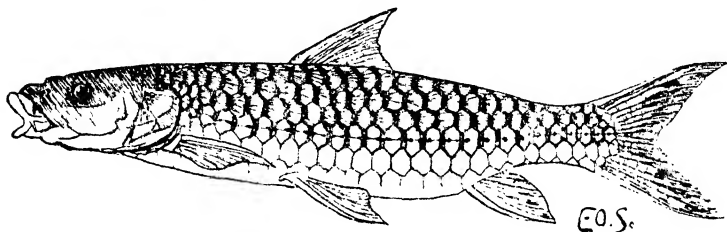
Plate 5, fig. 7.

**Note*.—Hora and Mukerji in a paper on the fishes of Dehra Dun, written after their tour there in 1935, have shown that the original *B. tor* of Hamilton Buchanan is the red-finned Mahseer or *Makhni* of Dehra Dun which does not occur in our area. Our Mahseer, known as the yellow-finned Mahseer in Dehra Dun, is identical with Hamilton's *B. putitora*.

Bengali : *Tor* তর, *Mahaser*, or *Mahasol* মহাসের or মহাশোল ; Nepalese : *Sor-machha* सोर माछ or *Saar* सार ; Mechi : *Jungia* (some Mechis call the light variety *Jungia* and the dark *Tor*).

D. 3/9. P. 19. V. 9. A. 2-3/5. C. 19. L. 1. 25-27. Barbels 2 pairs.

In mature fish the dorsal and ventral profiles are nearly parallel, in young fish the dorsal is more arched. Lips very extensible, no pores on snout. In some specimens of both sexes lips and snout are greatly swollen, apparently a breeding phase. Length of head $4\frac{1}{4}$ - $4\frac{3}{4}$, of caudal 5 - $5\frac{3}{4}$, height of body $5\frac{1}{2}$ in the total length in mature fish; in smaller specimens these ratios are: head 5, caudal $4\frac{1}{2}$, height $4\frac{1}{4}$.



TEXT-FIG. 35.—*Barbus putitora* (Hamilton).

Barbels: Maxillary longer than rostral and extending to below the last third of the eye.

Fins: Spine of dorsal smooth but strong.

Colour: Olive green on back and top of the head, scales above the lateral line golden with dark bases, those below paling progressively to the white of the belly. Fins yellow, the lower ones often tinged with red; extreme redness of the lower fins sometimes associated with thick lips. Iris golden. A variable fish which appears to develop local varieties as the types which we recognize in our area do not agree with those described elsewhere. We distinguish three types, one darker and deeper and another slenderer and more silvery than that described above which is the intermediate and commonest form. One of our photographs of a specimen of the silvery type shows a dark band along the lateral line which we have seen more pronounced in photographs from Burma. The dark variety is in shape and colour intermediate between the typical *B. putitora* and *B. dukai*, but has no pores below the eye like the latter.¹

Size: The heaviest fish which we know of having been caught in our area weighed 54 lb. and was caught by Mr. Ritchie at the junction of the Riyang with the Tista in August 1921. We believe the heaviest Mahseer ever caught on rod and line was Col. Rivett Carnac's from the Cauveri river which weighed 119 lb.

¹ I believe the three types of *Mahseers* referred to by Shaw and Shebbeare are (i) *B. putitora*, head longer than height of body, (ii) *B. hexastichus* McClelland, head as long as height of body, and (iii) *B. tor*, head shorter than height of body. It is quite possible that the large-scaled Barbels of Assam also occur in this area.—S. L. Hora.

Habitat: Small fish up to a few inches in length may be found in any clear gravelly stream in the Duars or Terai. Broadly speaking the larger the river the larger the *Mahseer* run. Day gives—'generally throughout India, but in the largest size and greatest abundance in mountain streams or those which are rocky'.

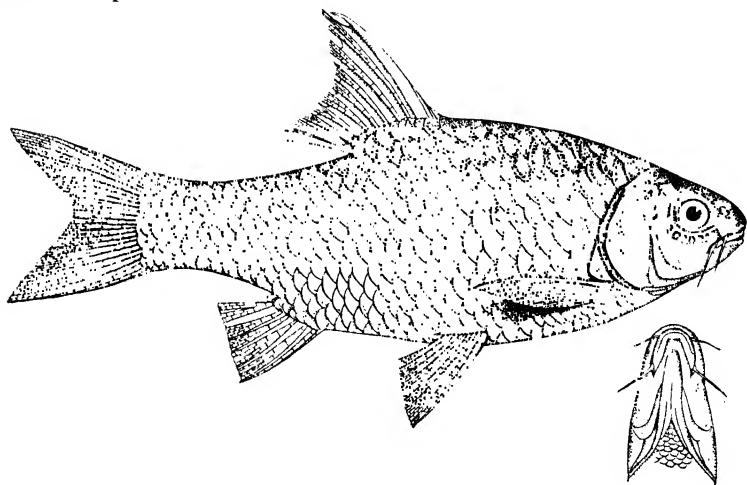
Habits: Considering that the *Mahseer* is the premier sporting fish of India, surprisingly little is known of its habits. They are said to have no definite spawning season but to lay their eggs a few at a time; we have, at any rate, taken fish with eggs throughout the cold weather. Judging by the distribution of young fish it would seem that they select slow, shallow, streams with gravelly beds to spawn in. We have also seen a few large fish in such streams. There seems to be no doubt that *Mahseer* appear to be travelling towards the headwaters of rivers at the beginning of the rains and downstream at the end, but this movement may be merely to avoid spates and be unconnected with spawning.

Barbus sarana (Ham.), *F.B.I.*, No. 341.

Plate 5, fig. 2.

Bengali (local): *Kurti* কুর্তি, (Lower Bengal) *Sarna-puriti* সর্না-পুর্টি; Rabha: *Na-Cheren*.

D. 3/8. P. 15. V. 9. A. 3/5. C. 19. L. 1. 32-34. Barbels 2 pairs.



TEXT-FIG. 36.—*Barbus sarana* (Hamilton).

Body deep, moderately compressed. No pores on the snout. Length of head $5\frac{1}{4}$, of caudal $4\frac{1}{4}$ -5, height of body $3\frac{1}{2}$ - $3\frac{3}{8}$ in the total length.

Barbels : Rostral as long as the orbit ; maxillary a little longer.

Fins : Dorsal spine finely serrate.

Colour : Silvery, darker on the back, a golden blotch on the opercle ; sometimes a small dark spot behind the gill-opening. Young have a faint black spot covering 25th to 28th scales on the lateral line. Fins greyish-white, caudal, pelvic and anal fins tipped with red.

Size : Our longest $10\frac{1}{2}$ inches ; ' at least a foot ', *Day*.

Habitat : Clear streams of the foot-hills, Terai and Duars also ponds and borrow-pits. *Day* gives—' Sind and the Punjab, throughout India, Assam, and Burma.'

***Barbus stigma*¹** (Cuv. and Val.), *F.B.I.*, No. 398.

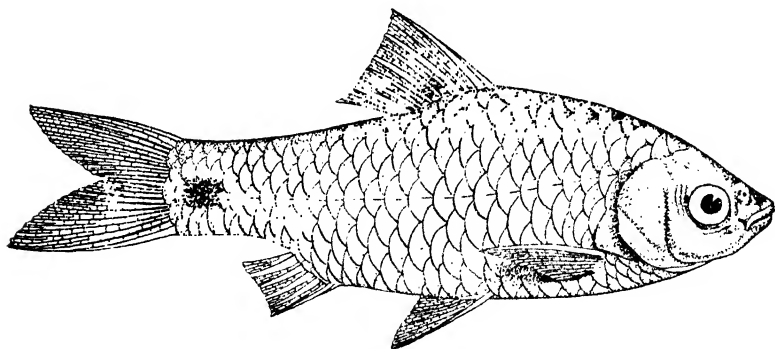
Plate 5, fig. 1.

Bengali : *Puñti* পুন্টি ; Mechi : *Puti-krei*.

D. 3/8-9. P. 17. V. 9. A. 3/5. C. 19. L. 1. 23-26. Barbels nil.

Very like *B. titius* in general appearance but lighter and more yellowish in colour (owing to the colour of the bases of the scales), and without barbels. Lateral line complete. Length of head $4\frac{3}{4}$ -5, of caudal 5, height of body $3-3\frac{3}{4}$ in the total length.

Fins : Dorsal spine rather weak, entire.



TEXT-FIG. 37.—*Barbus stigma* (Cuvier and Valenciennes).

Colour : Silvery with yellowish bases to the scales. Usually, but not always, a black spot with diffuse edges covering the whole of 20th scale on lateral line and partly covering the 6 adjacent scales. There is a smaller black mark close to gill-opening and an orange-golden spot just behind and below the eye. Fins

¹ This is the same fish as *Barbus sophore* (Ham.).

almost colourless, a diffuse transverse dark band on dorsal (or sometimes a dark central spot). A reddish or orange wash on outer margin of dorsal and tips of pelvics and anal, the former the brighter. Pectorals sometimes yellowish.

Size: Our longest 4 inches. Day—'at least 5 inches'.

Habitat: Very common everywhere below 2,000 ft. Day gives—'Sind, throughout India and Burma as high as Mandalay.'

***Barbus ticto* (Ham.), *F.B.I.*, No. 390.**

Plate 5, fig. 10.

Bengali: *Tita-punti* তিটা-পুন্ডি.

D. 3/8. P. 15. V. 9. A. 2/5. C. 19. L. 1. 23-26.
Barbels nil.

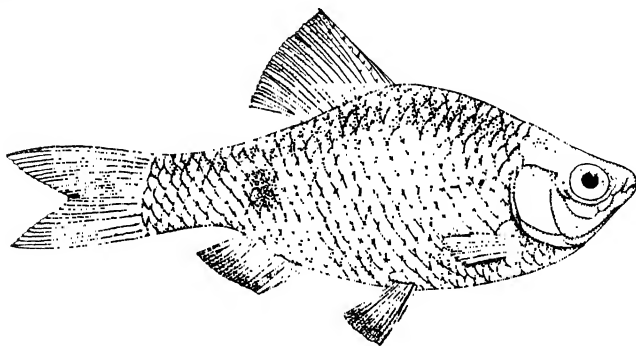
Not so deep as most of the black-spotted barbels. The lateral line ceases 6-8 scales from the gill opening. Length of head $4\frac{3}{4}$ -5, of caudal $4\frac{1}{2}$ -5, height of body $3\text{-}3\frac{1}{2}$ in the total length.

Fins: Dorsal spine strong, osseous and serrated.

Colour: Silvery, with two black spots on the lateral line, a smaller one a short distance behind the gills, on scale 3, and a larger one behind the base of anal, involving scales 18 to 21.

In the C.P. this fish turns brilliant red on the flanks and olive-green on the back from March to September. We did not notice this change here. Dr. Hora informs us that these are colour changes assumed by the males at the time of breeding.

Size: Our longest 1.4 inches. Day—'rarely exceeds 4 inches'.



TEXT-FIG. 38.—*Barbus ticto* (Hamilton).

Habitat: Our specimens are from the Mahanadi and Panchenai Rivers of the Terai. Day gives—'Sind, throughout India and Ceylon.'

Barbus titius (Ham.)1822. *Cyprinus titius*, Hamilton, *Fish. Ganges*, p. 315.

Plate 5, fig. 5.

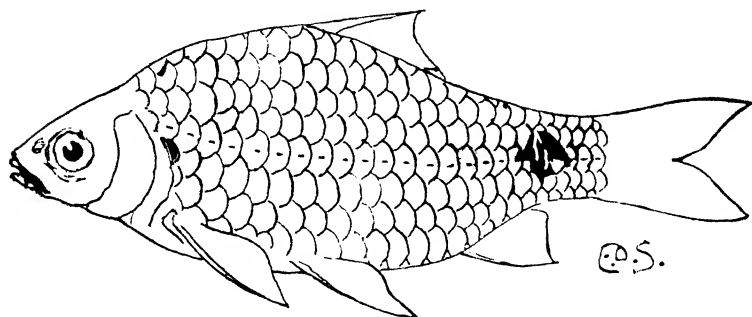
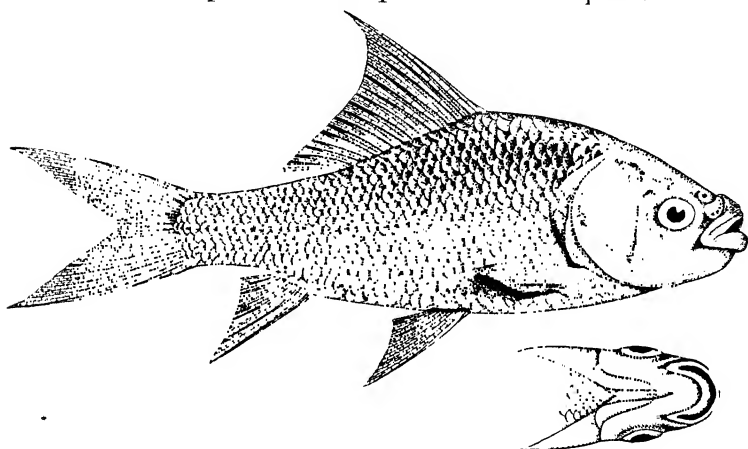
Bengali : *Punti* পুন্ডি; Mechi : *Na-pitikri*; Rabha : *Na-Nishen*.D. 2-3/8. P. 17. V. 9. A. 2/5. C. 19. L. 1. 24-26.
Barbels 1 pair.One of the several species of deep, compressed forms of *Barbus* known as *Puti*. Length of head $4\frac{1}{2}$ -5 ($4\frac{1}{2}$ Day), of caudal $4\frac{1}{2}$ -5, height of body $3\frac{3}{4}$ in the total length.*Barbels* : Maxillary, thin and $\frac{2}{3}$ rd length of orbit.*Fins* : Dorsal spine osseous, smooth.TEXT-FIG. 39.—*Barbus titius* (Hamilton).*Colour* : Silvery with a black spot at the gill-opening and a larger one on the lateral line involving the 19th to 21st scales (18th to 20th, Day). Fins yellow, pelvics and anal with a reddish wash.*Size* : Our longest 5 inches. Day says—'up to nearly 5 inches'.*Habitat* : Streams of Terai and Duars ; also in ponds and borrow-pits. Day gives—'Orissa, Bengal, Assam, N.W. Provinces, Punjab and Sind, also the Deccan.'[*Catla catla* (Ham.)], *F.B.I.*, No. 332 *Catla buehanani*.

Plate 5, fig. 9.

Bengali : *Katla* কাটলা; Hindi : *Chepti* चिप्टी.D. 3-4/14-16. P. 21. V. 9. A. 3/5. C. 19. L. 1. 38-43.
Barbels nil.Body deep, moderately compressed, head broad, mouth wide, lower jaw prominent with lip doubled outwards below. Length of head $4\frac{1}{4}$ - $4\frac{3}{4}$, of caudal $4\frac{1}{4}$ - $4\frac{3}{4}$, height of body $3\frac{1}{2}$ in the total length.

Fins: Caudal deeply forked. Pelvics 'in males extends to the anal'. (*Day*)

Colour: Dark grey above, silvery on the sides and white on the belly. Scales, except those of the belly pink or coppery in the centre. Fins very dark grey ('in some specimens nearly black', *Day*) except the base of pectoral which is paler.



TEXT-FIG. 40.—*Catla catla* (Hamilton).

Size: *Day* says it attains at least 6 feet in length.

Habitat: We have only seen them exposed for sale in bazaars. *Day* gives—'In fresh or brackish water—Sind, Punjab, through India to the Kistna, eastwards through Bengal, and Burma to Siam. This fish is largely employed for stocking tanks.'

[The range of *Catla catla* (Ham.) does not extend to Siam where it is replaced by an allied form *Catlocarpio siamensis* Blgr.—S. L. Hora.]

Habits: *Day* says it is said never to take a bait but rises to natural fly.

[*Cirrhina mrigala* (Ham.)], *F.B.I.*, No. 321.

Bengali: *Mrigala* ম্রিগাল; Nepalese: *Mirgal* मिरगल.

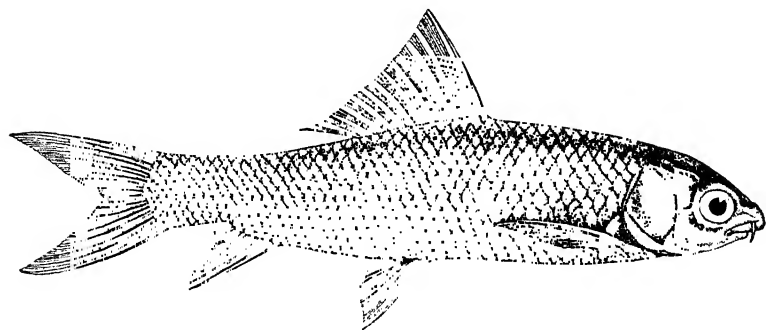
D. 3/12-13. P. 15. V. 9. A. 3/5. C. 15. L. 1. 40-45. Barbels 1 pair.

Very like a *Labeo* but with a wider mouth and thin lips. Pores on the snout in our specimens ('pores present or absent', *Day*). Lower jaw has a small tubercle in the centre. *Day* gives—'Length of head $5\frac{1}{4}$, of caudal 5, height of body $4\frac{1}{2}$, in the total length.'

Barbels: Small in fold of lip.

Fins: Caudal sharply forked. *Scales*: Large.

Colour : Dark grey along the back, silvery on the sides and below. Day says—‘sometimes having a coppery tinge ; pectoral, ventral (*i.e.* pelvics) and anal, orange stained with black. Eyes golden’.



TEXT-FIG. 41.—*Cirrhina mrigala* (Hamilton).

Size : Day says—‘growing to 3 feet in length. I have taken it in Rangoon 18 lb. in weight’.

Habitat : We have only seen them exposed for sale in Siliguri bazaar. Day gives—‘Rivers and tanks in Bengal, Deccan, N.W. Provinces, Punjab, Sind, Cutch, and Burma. It is an excellent species for stocking tanks with.’

Habits : It is said to give the best sport on rod and line of any tank-fish in Bengal.

***Cirrhina reba* (Ham.), *F.B.I.*, No. 323.**

Plate 2, fig. 9.

Bengali : *Kharkebata* খড়কেবটো, or *Raig* রাইগ; Hindi : *Rewa* रेवा, *Raicheng* रैचंग (Chapra district) ; Mechi : *Na-bhangna*.

D. 2-3/8-9. P. 16. V. 9. A. 3/5. C. 19. L. 1. 35-38. Barbels one pair.

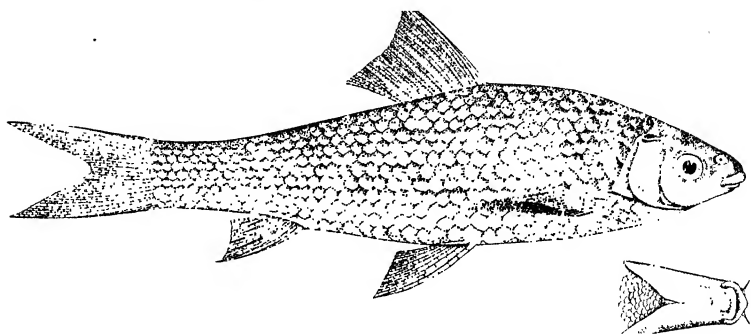
The description of *C. mrigala* will apply to this fish except that the barbels are rostral, short and rather stiff. (According to Day they may be absent.) Upper lip fringed in young. ‘Pores on snout present or absent.’ (*Day*) Length of head 6-6½, of caudal 4¾-5½, height of body 4-5 in the total length.

Barbels : See general description above.

Fins : Caudal deeply forked ; lobes sharply pointed. *Scales* hexagonal.

Colour : Dull silvery, scales darkest at their upper and lower edges forming bluish longitudinal lines above, and for two or three rows below, the lateral line. Pelvics and anal

tipped with orange. 'Young have sometimes a leaden band along the sides.' (Day)



TEXT-FIG. 42.—*Cirrhina reba* (Hamilton).

Size : Ours up to $9\frac{1}{2}$ inches long. Day says one foot.

Habitat : Rivers and clear streams in the Terai and Duars. Day gives—'Throughout India.'

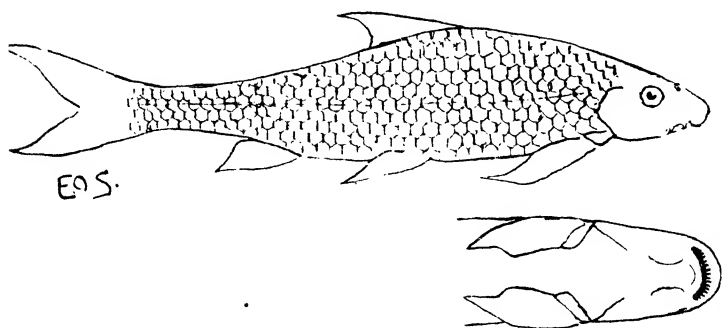
Crossocheilus latia (Ham.), *F.B.I.*, No. 322 *Cirrhina latia*.

Plate 2, fig. 12.

(Note.—For sometime we confused this fish with *Garra annandalei*, hence the vernacular names we have recorded for both are open to doubt.)

Hindi : *Gauma* गौमा.

D. 3/7-8. P. 15. V. 9. A. 2/5. C. 19. L. 1. 38-40. Barbels 2 pairs.



TEXT-FIG. 43.—*Crossocheilus latia* (Hamilton).

A very variable species (see Mukerji's note on the different races, *Bombay Nat. Hist. Soc. Journal*, XXXVIII, 1st part, 1934). It resembles *Garra annandalei* but is a slenderer and more graceful fish and has a more deeply forked caudal fin with more pointed lobes. Length of head 7 (*Garra* 5-5 $\frac{3}{4}$), height of

body $6\frac{3}{4}$ (*Garra* 5-6), vent to base of caudal $3\frac{1}{2}$ (*Garra* $4\frac{1}{2}$), height of caudal peduncle 12 (*Garra* $8\frac{1}{2}$) in total length.

Barbels : Rostral pair half the length of the maxillary.

Colour : Grey above, with less colour than *Garra*, silvery beneath.

Size : Our longest 6 inches ; Day says it attains 8 inches.

Habitat : All hill streams from plains level to 2,000 ft. Day gives—‘ Sind, Orissa, Bengal, N.W. Provinces, Punjab, Deccan, and along the Himalayas.’

Habits : It behaves very like the *Garras* adhering to stones in stream beds.

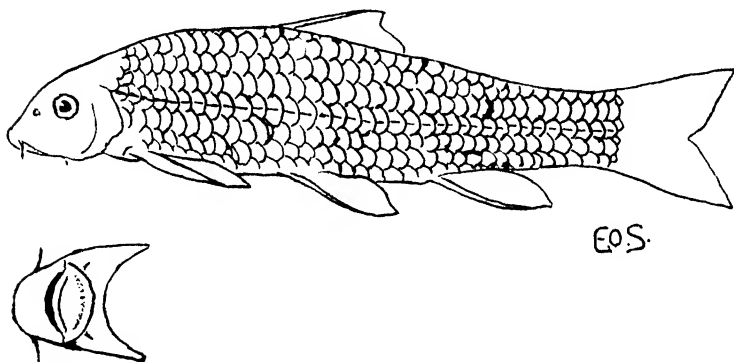
Garra annandalei Hora.

1921. *Garra annandalei*, Hora, *Rec. Ind. Mus.*, XXII, p. 657.

(*Note*.—For some time we confused this fish with *Crossocheilus latia*, hence the vernacular names we have recorded for each are open to doubt.)

Nepalese : *Lohari* लोहारी.

D. 2/9. P. 14. V. 9. A. 2/6. C. 21. L. 1. 34-38. Barbels 2 pairs.



TEXT-FIG. 44.—*Garra annandalei* Hora.

Very like *G. gotyla* in all respects except that it has no groove across the snout nor tubercles upon it.

Size : Our longest was 6 inches.

Habitat : Found in the same streams as *G. gotyla* but less common.

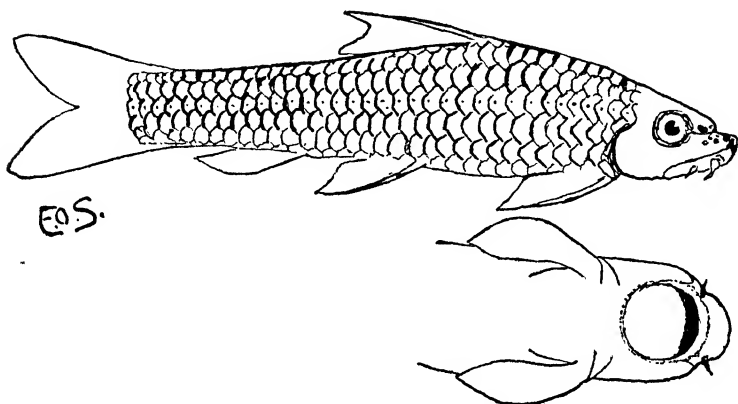
Garra gotyla (Gray), *F.B.I.*, No. 279 *Discognathus lamta*,
in part.

Bengali : *Ghor-poia* ঘরপোয়া ; Nepalese : *Budena** बुदेना ;
Lepcha : *Momut* ; Mechi : *Chiltuka* ; Rabha : *Shetoka* or *Siltoka*.

**Note*.—The Nepalese word *budena* is also applied to a short, heavy kukri and probably refers to the stumpy shape of this fish.

D. 2-3/8-9. P. 15. V. 9. A. 2/5. C. 17. L. 1. 32-34. Barbels 2 pairs.

Body elongated, sub-cylindrical, mouth semi-circular inferior, a suctorial disc on the chin, upper lip fringed. Snout covered with pores or with conical tubercles and has a deep groove across it forming a proboscis. This groove is not determined by sex or by locality. Length of head $5\frac{3}{4}$ ($5-5\frac{1}{2}$, Day), caudal $5-6\frac{1}{4}$ (Day), height 5-6 (Day) in total length.



TEXT-FIG. 45.—*Garra gotyla* (Gray).

Barbels: One pair rostral and one pair maxillary, both about the length of the orbit.

Fins: Caudal shallowly lobed.

Colour: Yellowish to coppery green, fins darker and may be fringed with yellow or red. Sometimes a dark spot behind gill-opening.

Size: 'At least 8 inches in length.' (Day)

Habitat: Common in all clear streams from plains level to at least 1,600 ft. (Riyang River). Day gives:—'From Syria throughout India and Ceylon to the Tenasserim provinces, and likewise found in Abyssinia and at Aden.'

Day's *D. lamta*, however, includes also *G. annandalei* which has no proboscis and no tubercles.)

[*Garra gotyla* (Gray), as restricted at the present day, is found in the Chindwin drainage of Burma, Assam hills, along the Himalayas and the Vindhya. A variety of this species has also been described from Ceylon.—S. L. Hora.]

Genus LABEO.

The remaining genera of the CARPS mostly lack the shining appearance of those already described; they are leaden rather than silvery. In *Labeo* the general colour is leaden though often the centre of each scale is paler than the margin, often pink or reddish (this is so in *Catla catla* also). These dark margins may coalesce to form dark, horizontal lines along the rows of scales (this is so in *Cirrhitina reba* also). The lips and snout are fleshy, the lips being continuous round both jaws and the snout often covered with pores. *Labeo* are found in tanks and rivers, where they seem to be bottom-feeders.

It is not easy to key the somewhat variable species which we have found in our area.

L. l. 71-84	<i>L. gonius</i> p. (54)
L. l. 37-44	
22-24 branched dorsal rays ..	<i>L. nandina</i> (p. 55)
13-15 branched dorsal rays :—	
Height $3\frac{1}{2}$ -4 in total length ..	<i>L. calbasu</i> (p. 52)
Height 4-4 $\frac{1}{2}$ in total length ..	<i>L. rohita</i> (p. 57)
11 branched dorsal rays :—	
Mouth wide ($2\frac{1}{4}$ in length of head) ..	<i>L. dyocheilus</i> (p. 53)
Mouth narrow ($3\frac{1}{4}$ in length of head)	<i>L. pangusia</i> (p. 56)
9-10 branched dorsal rays :—	
A groove across snout	<i>L. dero</i> (p. 53)
No groove across snout :—	
Height 4-4 $\frac{1}{2}$ in total length ..	<i>L. bata</i> (p. 50)
Height 5-5 $\frac{1}{4}$ in total length ..	<i>L. boga</i> (p. 51)

***Labeo bata* (Ham.), F.B.I., No. 306.**

Bengali (local) : *Bhangna* (?) ভাঙ্গনা, (Lower Bengal) *Bhangana-bata* ভাঙ্গনবাটা; Mechi : *Lengsa* (?).

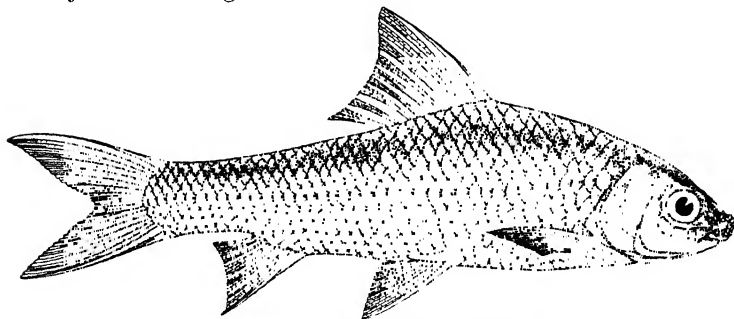
D. 2-3/9-10. P. 18. V. 9. A. 2/5. C. 19. L. l. 37-40. Barbels 1 pair.

We have only obtained one specimen identified as this species (by the Indian Museum) and our only notes on this, other than the vernacular names, are to the effect that it was a much more graceful fish than *L. boga*, which it otherwise resembled but had a narrower snout (Day gives the width of mouth for this species $3\frac{1}{2}$ into length of head as against 3 for *L. boga*). We have therefore extracted the following from Day : Length of head $5\frac{1}{2}$ - $5\frac{3}{4}$, of caudal 5 - $5\frac{1}{2}$, height of body 4 - $4\frac{1}{2}$ in the total length.

Colour : 'Varies with the age of the fish; generally silvery, darkest along the back, and with the lower fins stained orange. Fine black dots on all the fins. When about four inches long there are three or four small black spots on the 5th and 6th

scales on the lateral line, which gradually and almost entirely fade as age advances.'

Size: Our specimen was $6\frac{3}{4}$ inches. Day says—'attains nearly 2 feet in length.'

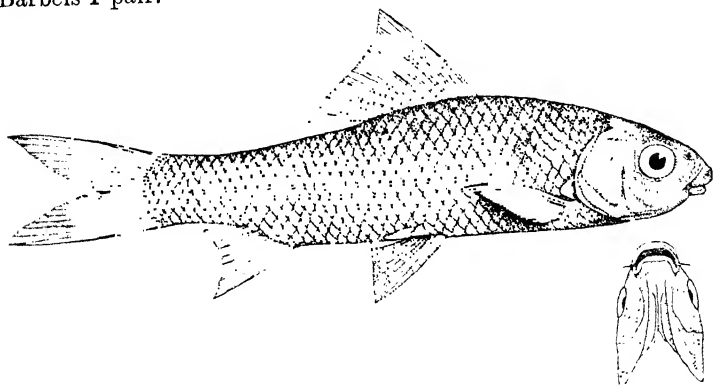


TEXT-FIG. 46.—*Labeo bata* (Hamilton).

Habitat: Our only specimen was from the Apalchand River in the west of the Duars. Day gives—'From the Kistna and Godavery Rivers, through Orissa, Lower Bengal, and Assam. Extensively used for stocking tanks.'

Labeo boga (Ham.), *F.B.I.*, No. 309.

D. 2-3/9-10. P. 16. V. 9. A. 2/5. C. 19. L. 1. 37-39.
Barbels 1 pair.



TEXT-FIG. 47.—*Labeo boga* (Hamilton).

A somewhat robust fish. There are no lateral lobes to the snout which has a few large pores. Day gives—'Length of head $5\frac{1}{4}$ - $5\frac{1}{2}$, of caudal 5, height of body $5\frac{1}{2}$ - $5\frac{3}{4}$.'

Barbels: We have not found any; Day says there are two minute maxillary ones. Lips rather thick.

Fins : Caudal deeply forked.

Colour : Dark above, silvery on sides and below. Sometimes a dark spot on the shoulder. Opercle coppery. Fins covered with fine black dots, caudal quite red. Day gives—'Orange, with the fins of a reddish tinge.'

Size : Our longest 1 foot. Day gives—'Said to attain a foot in length'.

Habitat : All our specimens are from the Jaldhaka River (Duars). Day gives—'Rivers of the Gangetic Provinces, Madras, and Burma.'

Labeo calbasu (Ham.), *F.B.I.*, No. 293.

Plate 5, fig. 11.

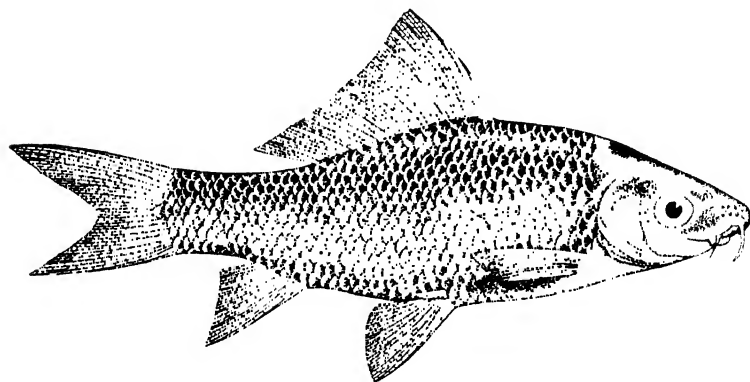
Bengali (local) : *Kursha* কুর্শা, (Lower Bengal) *Kalbaus* কালবৌস or *Kalbasu* কালবসু.

D. 3/13-15. P. 19. V. 9. A. 2/5. C. 19. L. 1. 40-44. Barbels 2 pairs.

A deep, stockily-built fish. Mouth rather narrow, snout obtuse and depressed, no lateral lobe. Pores on snout and upper lip, chin slopes away sharply from mouth. Length of head 5-6, of caudal 4-5, height of body $3\frac{1}{2}$ (4, *Day*) in the total length.

Barbels : Rostral barbels slightly longer than maxillary and about equal in length to diameter of orbit.

Fins : Caudal deeply forked.



TEXT-FIG. 48.—*Labeo calbasu* (Hamilton).

Colour : Dusky—each scale with a pinkish buff (or even scarlet) centre and a dark (even blackish) margin; the margins sometimes form dark longitudinal lines. Fins dark. Iris rich coppery.

Size : Our largest specimen 20 inches long. Day writes—'It grows to three feet in length.'

Habitat : Deep pools in clear sluggish streams (e.g. Bania River) such as occur towards the South of our area. Day gives—‘ Punjab, Sind, Cutch, Deccan, Southern India, and Malabar, from the Kistna, through Orissa, Bengal, and Burma.’

Habits : It is said to be a tank fish and we understand that it gives good sport on rod and line.

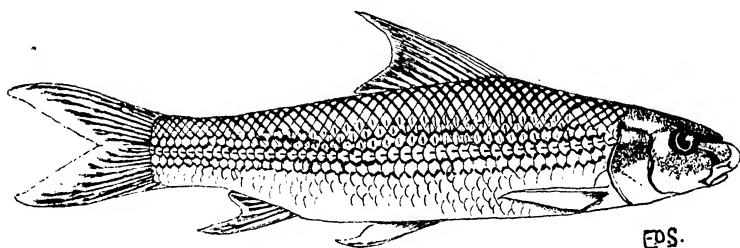
Labeo dero (Ham.), *F.B.I.*, No. 302 *Labeo diplostomus*, in part.

Plate 2, fig. 7.

Bengali : *Kursha* (?) কুরশা or *Katalkusi* কাটালকুসী ; Hindi : *Bongsa* बोंगसा ; Nepalese : *Gurdi* गुरदी or *Goddi* गोदी ; Mechi : *Phunkeita*.

D. 2-3/9-10. P. 17. V. 9. A. 2/5. C. 19. L. 1. 41-44. Barbels 1 pair.

More slender than the species of *Labeo* hitherto described. The snout has a more or less deep groove across it and is covered with pores. There is no lateral lobe. Length of head 5-5½, of caudal 4¾-5, height of body 5-5½ in the total length.



TEXT-FIG. 49.—*Labeo dero* (Hamilton).

Barbels : A small maxillary pair, not always found.

Fins : Caudal deeply forked, upper lobe sometimes slightly the longer.

Colour : Dull silvery grey darkest along the back. Scales often, but not always, tinged with red or with a red vertical line on each one. Margins of scales sometimes forming dark longitudinal lines on flanks. Dorsal and caudal fins grey tinged with red, other fins salmon coloured.

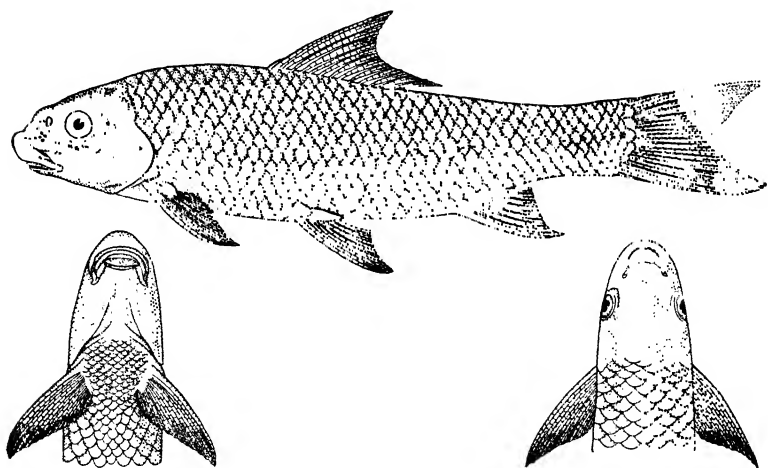
Size : Our longest 10½ inches.

Habitat : Streams and rivers of the Terai and Duars ; in the hills only in the larger rivers. Day gives—‘ Along the Sind hills and Himalayas also in the Brahmaputra in Assam ’.

Labeo dyocheilus (McClell.), *F.B.I.*, No. 303.

D. 2/11. P. 17. V. 9. A. 2/5. C. 19. L. 1. 43. Barbels 1 pair.

Note.—Five of our *Labeo* were identified as this species by the Indian Museum ; we cannot distinguish them from young *L. pangusia*, but see Mukerji's note on the different races, *Bombay Nat. Hist. Soc. Journal*, XXXVII, 1st part (1934). A very variable species.



TEXT-FIG. 50.—*Labeo dyocheilus* (McClelland).

From Day's 'Fishes of India' the following appear to be the differences between the two species :—

L. dyocheilus.

P. 17. L. l. 43.
Length of head $5-5\frac{1}{2}$, of caudal
 $5\frac{1}{2}$ in total length.

Mouth wide, $2-2\frac{1}{2}$ in length of
head.

Sometimes depression across snout.

P. reaches V. and V. reaches base
of A.

L. pangusia.

P. 15. L. l. 40-42.

Length of head $5\frac{3}{4}-6$, of caudal
 $4\frac{1}{2}-5$ in total length.

Mouth narrow, $3\frac{3}{4}$ in length of head.

No depression across snout.

P. does not quite reach V. nor V.
reach base of A.

Size : Our longest specimen 4·6 inches. Day says—'attains at least 3 ft. in length'.

Habitat : We do not know in which stream our specimens were obtained. Day gives—'Sind hills and along the Himalayas to Sikkim and Assam. It is common in Assam'.

Labeo gonius (Ham.), *F.B.I.*, No. 295.

Plate 2, fig. 11.

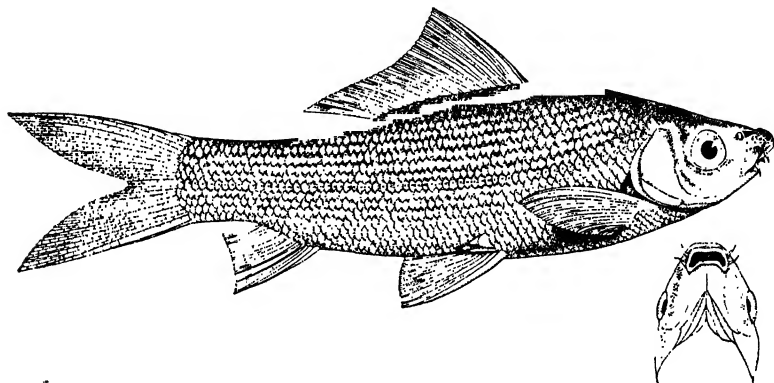
Bengali : *Kurchi* কুর্চী or *Goni* গনি.

D. 2·3/13-14. P. 17. V. 9. A. 2/5. C. 19. L. l. 71-84.
Barbels 2 pairs.

Body not so deep as in *L. nandina* and *calbasu*. Snout prominent and with numerous pores but without a lateral lobe. Mouth narrow with extensible lips which are fringed. Length of head $5\frac{1}{2}$, of caudal $5\frac{1}{2}$, height of body $4\frac{1}{2}$ in the total length.

Barbels : Minute.

Fins : Caudal deeply forked, both lobes pointed.



TEXT-FIG. 51.—*Labeo gonius* (Hamilton).

Colour : Greenish along the back becoming lighter on the sides. Scales with dark margins giving the effect of dark longitudinal lines, 'many (scales) having red lunules.' (*Day*)

Habitat : One specimen from South Borajhar forest (Eastern Duars), also exposed for sale in Siliguri bazaar. *Day* gives—'Indus in Sind, through the N.W. Provinces, Bengal, and Orissa to Ganjam, as low as the Kistna, Assam and Burma.'

Size : Our specimen 5.9 inches long. *Day* gives—'Up to nearly 5 feet in length.'

[*Labeo nandina* (Ham.)], *F.B.I.*, No. 290.

Plate 5, fig. 12.

Bengali : *Nandi* নন্দি.

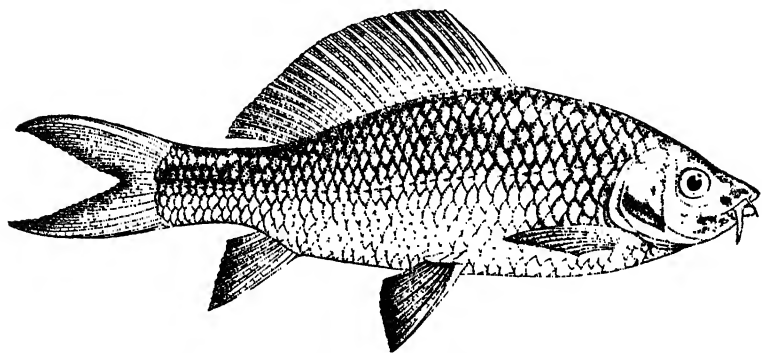
D. 2-3/22-24. P. 15. V. 9. A. 2/5. C. 19. L. 1. 42-44.
Barbels 2 pairs.

A somewhat robust fish both profiles, but especially the dorsal, curved; slightly concave above the eyes. Snout obtuse, projecting slightly beyond the jaws and having no lateral lobe. Width of mouth $\frac{1}{4}$ length of head. 'Lips thick and fringed, with a distinct inner fold above and below.' (*Day*.) Length of head $4\frac{1}{2}$ -5, of caudal $4\frac{1}{4}$ - $4\frac{1}{2}$, height of body $3\frac{1}{2}$ (4, *Day*) in the total length.

Barbels : Short.

Fins : Caudal deeply forked.

Colour: Dark greenish above becoming lighter below; many scattered scales orange-red. Day says—‘A few cloudy blotches along the sides.’ Iris red.



TEXT-FIG. 52.—*Labeo nandina* (Hamilton).

Size: Our specimen $7\frac{1}{2}$ inches.

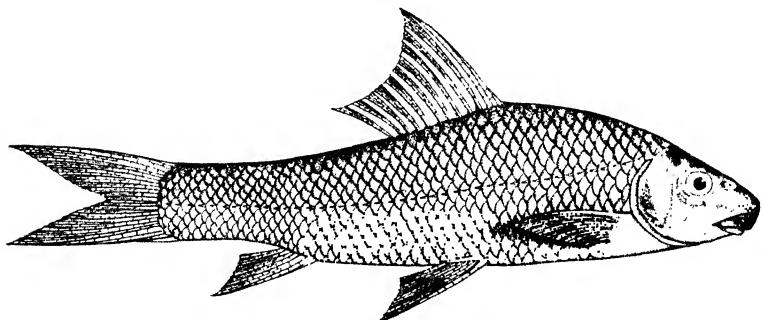
Habitat: We have only found this fish exposed for sale in Siliguri bazaar. Day gives—‘Bengal, Assam, and Burma.’

Labeo pangusia (Ham.), *F.B.I.*, No. 304.

Plate 2, fig. 6.

Bengali: *Utti* উত্তী; Nepalese: *Ter-mas* टेरमास, *Tera* टेरा, or *Dhenkara*(?) धेनकारा; Tharu: *Rewa* रेवा; Assamese: *Lasu*.

D. 2/11. P. 15. V. 9. A. 2/5. C. 19. L. 1. 40-42. Barbels 1 pair.



TEXT-FIG. 53.—*Labeo pangusia* (Hamilton).

Very like *L. dyocheilus* without the groove across the snout and with very distinct lateral lobes. The snout, too, is very obtuse with a large frontal area covered with pores above. Length of head $5\frac{1}{2}$ -6, of caudal $4\frac{1}{2}$ -5, height of body $4\frac{1}{2}$ - $4\frac{3}{4}$ in the total length.

Barbels : Short, maxillary, concealed in labial fold.

Fins : Caudal deeply forked ; the lower fins in this species are slightly shorter than in *L. dyocheilus*.

Colour : Dull grey-green, lighter on the sides and beneath. Fins sometimes tinted red. 'Sometimes each scale has a dark mark.' (*Day*)

Size : Our longest $25\frac{1}{2}$ inches.

Habitat : From the largest rivers to the smallest, clear-water, streams in the Duars and Terai. Day gives—'Himalayan range and generally through Sind, the Deccan, N.W. Provinces to Bengal, Cachar, and Assam.'

Habits : A large proportion of these fish in a poacher's catch is, we believe, an indication that dynamite has been used. This suggests that they remain at the bottom of deep pools where the effect of the charge might be supposed to be greatest.

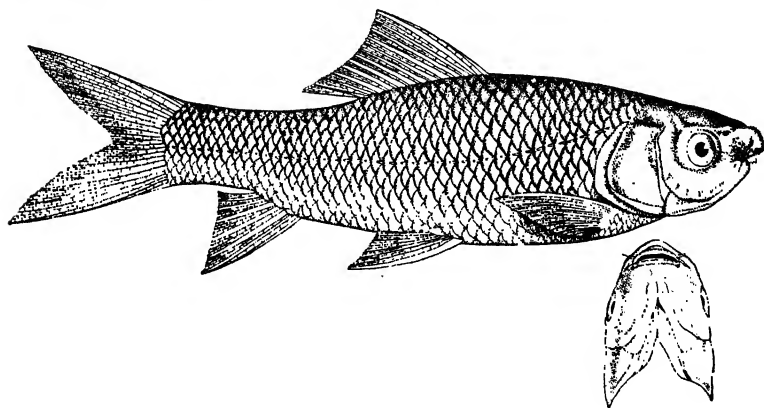
Labeo rohita (Ham.), *F.B.I.*, No. 297.

The Rohee.

Bengali : *Rui* রুই ; Hindi : *Rohu* रोहू.

D. 3/12-13. P. 17. V. 9. A. $2\frac{5}{5}$. C. 19. L. 1. 40-42. Barbels one or two pairs according to Day ; none in ours.

Very like *L. nandina* in general appearance ; snout with no lateral lobe. Day gives—'Length of head $4\frac{1}{2}$ -5, of caudal $4\frac{1}{2}$, height of body $4\frac{1}{2}$ in the total length'.



TEXT-FIG. 54.—*Labeo rohita* (Hamilton).

Barbels : According to Day there is 'a short and thin maxillary pair. A rostral pair is said to be sometimes present'.

Fins : Caudal deeply forked.

Colour : 'Bluish or brownish along the back, becoming silvery on the sides and beneath.' (*Day*.) Ours were grey

above, scales with dark margins and red centre or sometimes orange buff inside a dark edging. Fins diffusely banded grey and red.

Size : The largest we have measured was $29\frac{1}{2}$ inches long. Day says it attains three feet or more.

Habitat : Deep pools in clear sluggish streams (e.g. Bania River) such as occur towards the south of our area. Day gives—'Fresh-waters of Sind, and from the Punjab through India and Assam to Burma'. It is largely used to stock tanks.

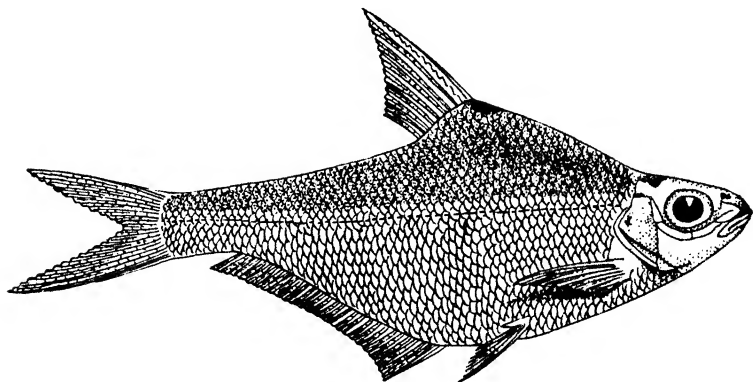
Habits : It is caught in tanks on rod and line and said to give good sport.

Rohtee cotio (Ham.), *F.B.I.*, No. 417.

Bengali : *Mauwa* মাউয়া ; Hindi (Bihar) : *Gurda* गुरदा.

D. 11-12(3-4/8). P. 13. V. 10. A. 29-36(2-3/27-33). C. 19. L. 1. 55-70. Barbels none or rudimentary.

'Profile over nape concave, from thence a great rise to the base of the dorsal fin, upper jaw slightly the longer.' (Day) Length of head $5\frac{1}{2}$ -6, height of body 3-3 $\frac{1}{2}$ in total length.



TEXT-FIG. 55.—*Rohtee cotio* (Hamilton).

Colour : 'Silvery, darkest along the back and sometimes with a silvery lateral band. Some have a black blotch before the base of the dorsal fin, and another on the nape.' (Day)

Size : Day gives—'Attaining at least 6 inches.'

Habitat : We have only one specimen from our area—the Apalchand River in the Western Duars, but it is sometimes sold in Siliguri bazaar. Day gives—'From Sind throughout India (except the Malabar Coast and south of the Kistna) and Burma.'¹

¹ Mukerji notes that *R. cotio* is replaced in Burma by another species *R. duvaucelii*.

Semiplotus semiplotus (McClell.), *F.B.I.*, No. 326 *Semiplotus maclellandi*.

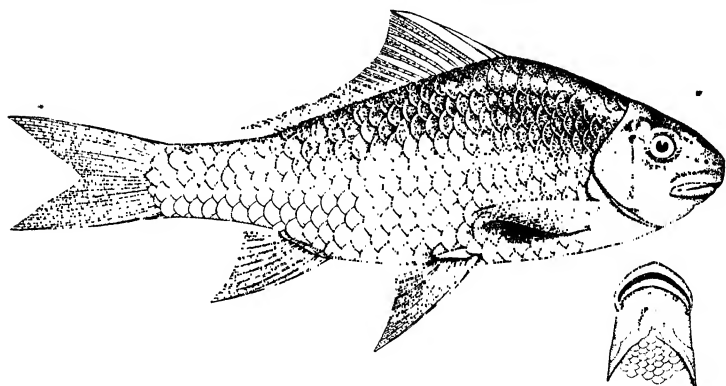
Plate 5, fig. 8.

Bengali (local): *Badangi* বাদাঙ্গী; Nepalese: *Chepti* चेपटी; Mechi: *Darangni*.

D. 3/24-25. P. 16. V. 10. A. 2/7. C. 19. L. 1. 27-33. Barbels nil.

Body deep but not much compressed laterally. Snout thick and prominent with a very distinctive row of open pores above the mouth. Mouth wide, inferior. Length of head $5\frac{1}{2}$ -6, of caudal $4\text{--}4\frac{1}{2}$, height of body $3\frac{1}{2}$ - $3\frac{3}{4}$ in the total length.

Fins: The last undivided ray of dorsal strong and osseous, the first few branched rays much longer than the rest. Caudal deeply forked with pointed lobes.



TEXT-FIG. 56.—*Semiplotus semiplotus* (McClelland).

Colour: Dull silvery, darkest above. Fins yellowish, the lower ones sometimes tinted orange. When seen in the water there appears to be a dark mark at mid-body passing over the back but this is not visible out of water.

Size: We have taken them up to 9 inches in length but they are usually smaller. Day says they attain two feet.

Habitat: In all clear streams of the lower hills, Terai and Duars, particularly in moderately slow water where it is one of the commonest of our fishes. Day gives—'Rivers in Assam, especially in the upper portion of that district, but found as low as Goalpara; also Burma.'

Habits: Griffiths says that it refuses all baits and we have never known it taken on rod and line.

Group V.—THE CARPS WITHOUT LARGE SWIM-
BLADDERS.

Psilorhynchus balitora (Ham.), *F.B.I.*, No. 278.

Plate 2, fig. 3.

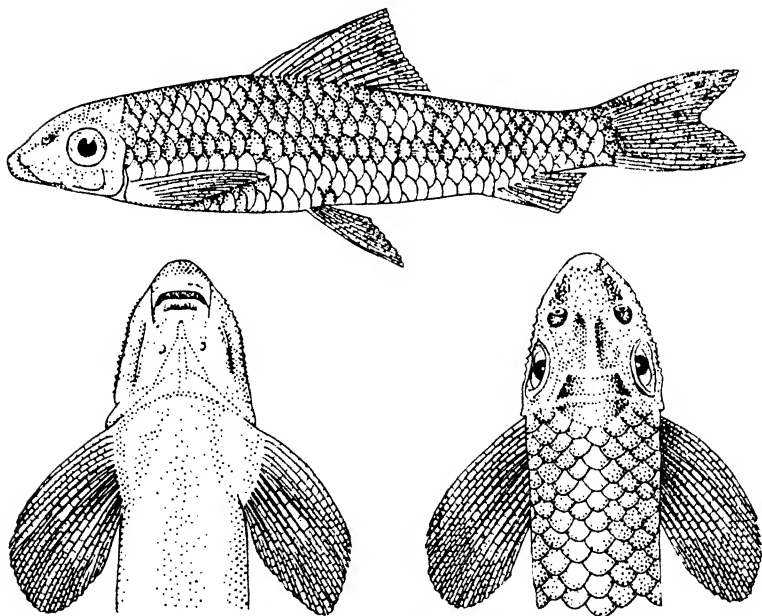
Hindi : *Titari* टिटारी.

D. 2/7-8. P. 17. V. 9. A. 2/5. C. 18. L. 1. 35. Barbels nil.

Back very much arched, under surface flattened, head somewhat depressed. 'Length of head $5\frac{1}{4}$, of caudal 5, height of body 5 in the total length.' (*Day*). But for the absence of barbels looks very like a young *Garra*.

Fins : Dorsal in advance of pelvics, pectorals and pelvics nearly horizontal, the outer 7 rays of the former and two of the latter unbranched.

Mouth : Small, below tip of snout.



TEXT-FIG. 57.—*Psilorhynchus balitora* (Hamilton).

Colour : Yellowish grey to brown ('reddish-brown', *Day*) with diffuse darker blotches.

Size : Our longest $2\frac{1}{2}$ inches.

Habitat : Streams of the Terai and Duars. *Day* gives—'Hill streams and rapids in N.E. Bengal and Assam.' This species has been recently recorded for the first time from Burma

by Mukerji [see *Journ. Bombay Nat. Hist. Soc.*, XXXVI, pp. 829-831 (1933)].

***Psilorhynchus sucatio* (Ham.).**

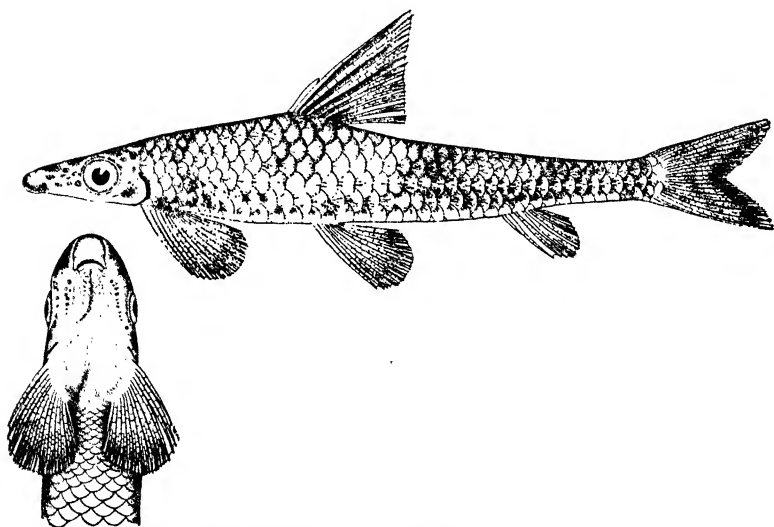
1822. *Cyprinus sucatio*, Hamilton, *Fish. Ganges*, pp. 347, 393.

Note.—This fish has been confused by Day with *Homaloptera bilineata* Blyth. See Mukerji's note in *Bombay Nat. Hist. Soc. Journal*, XXXVI, pp. 823-828 (1933).

D. 2/7-8. P. 4/9-10. V. 2/7-8. A. 2/5. L. 1. 36-38. Barbels nil.

Head markedly depressed and spatulate, otherwise very like *P. balitora*. 'The length of the head is contained about 5 times in the length of the body excluding the caudal fin. The depth of the body... is contained $5\frac{1}{2}$ times in the length of the body' (Hora, *Rec. Ind. Mus.*, Vol. XXII. p. 731, 1921). Eyes large, 3 diameters in length of head.

Fins: 'The dorsal fin commences in advance of the ventrals (*i.e.* pelvics) and its origin is much nearer the tip of the snout than to the base of the caudal fin.... The caudal fin is.... deeply forked. Both the lobes are pointed; the upper is slightly longer than the lower.' (Hora, *op. cit.*) Paired fins horizontal.



TEXT-FIG. 58.—*Psilorhynchus sucatio* (Hamilton). (Copied from *Rec. Ind. Mus.*)

Colour: Light brown with irregular black blotches above and below the lateral line. Hamilton describes it as—'greenish, with scattered dots; on the sides these are collected into clouds, and below the body is whitish and diaphanous.'

Hora (*op. cit.*) describing Annandale's and Shaw's specimens from the Mahanadi and Sivoke rivers writes—"five broad, clouded vertical bands on the body and a number of stripes on the caudal fin." We have a note (by Shebbeare) on a fish from either the Sivoke or Gulma River—"Reddish-yellow. Each scale with two dark brown horizontal lines, scales below the lateral line with brown spots'.

Size : Our longest $3\frac{1}{4}$ inches.

Habitat : Clear rapid streams of the Terai (Mahanadi, Gulma, and Sivoke). Hamilton found this fish in 'the rivers of Northern Bengal.'

Balitora brucei Gray, *F.B.I.*, No. 275 *Homaloptera brucei*, in part.

Note.—Under this name Day confused the species here described with a quite distinct fish from South India now called *Bhavana australis* (Jerdon).

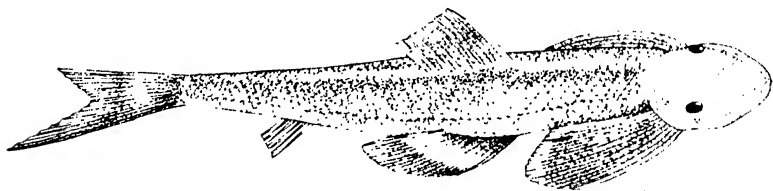
Nepalese : *Tita-kabri* तिता-काब्री .

D. 3/8. P. 9-10/12-11. V. 2/9. A. 2/5. C. 17. L. 1. 62-69(70 Day). Barbels 3 pairs.

Snout and anterior part of the body depressed, snout spatulate. 'Length of head $6\frac{1}{2}$, of caudal 5 in the total length.' (Day)

Barbels : One pair maxillary and two pairs rostral, all very short. *Mouth* small, inferior.

Fins : Pectorals nearly reach pelvics ; lower lobe of caudal longer. 'Scales absent from chest and as far as the posterior margin of the base of the ventrals (*i.e.* pelvics).' (Day)



TEXT-FIG. 59.—*Balitora brucei* Gray. (Copied from *Rec. Ind. Mus.*)

Colour : Brown blotched with a darker tint.

Size : Our longest $3\frac{1}{4}$ inches.

Habitat : Our specimens are from the Mahanadi River (clear with sand and gravel). Day gives—'(Wynaad and Bowany Rivers in Madras),¹ Himalayas from about Darjeeling through Boutan, Assam, and the Khasia Hills.'

[Since Day's time *Balitora brucei* has been recorded from several localities in Burma and from the Chittagong Hill-Tracts.—*S. L. Hora.*]

¹ The words enclosed by us in brackets refer to the South Indian species, *Bhavana australis* (Jerdon).

Group VI.—THE LOACHES.

KEY TO THE FAMILY COBITIDÆ (LOACHES) IN THIS LIST.

A sharp, bony prickle beneath the eye in both sexes :—

Front of Dorsal nearer to snout than to base of Caudal or mid-way between them :—

Caudal deeply forked (lobed part as long as unlobed) :—

Caudal about twice as long as the height of its base ; about 7 oblique darker bands from back to belly and 3 bars across Caudal *Botia dario* (p. 65)

Base of Caudal about $1\frac{1}{2}$ times into its length ; body mottled with paler blotches or short transverse bands on a darker ground *Botia dayi* (p. 66)

Caudal not, or very shallowly, forked (lobed for less than $\frac{1}{4}$ of its length) :—

Profile elevated over the eyes, at which point body is deepest ; 6 or 7 dark blotches from snout to tail along lateral-line with less intense markings between this and the back.

Somileptes gongota (p. 78)

Body deepest about Dorsal :—

A broad dark band flanked by lighter ones along the lateral-line .. *Lepidocephalichthys guntea* (p. 68)

About 10 dark marks along lateral-line and 8 bars across the back, an intense dark spot at top of base of Caudal—
Lepidocephalichthys annandalei (p. 67)

Dorsal much nearer Caudal than the snout ; no markings—

Acanthophthalmus pangia (p. 65)

No bony prickle beneath the eye, though males may have a cartilaginous pad there :—

Vent much nearer end of Caudal than tip of snout—

Nemachilus spp. (for key, see p. 69)

Vent about mid-way between snout and end of Caudal—

Aborichthys elongatus (p. 63)

Aborichthys elongatus Hora.

1921. *Aborichthys elongatus*, Hora, *Rec. Ind. Mus.*, XXII, p. 735.

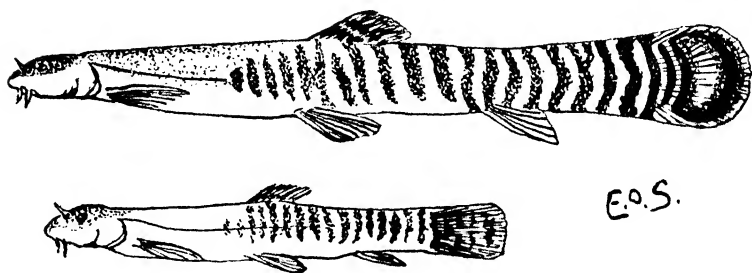
D. 2/6. P. 10. A. 2/5. C. 19. Barbels 3 pairs.

Body very much elongated, cylindrical in front and laterally compressed towards the tail. The dorsal and ventral profiles almost parallel. The vent is far forward, level with the posterior end of the pelvics. Length of head 6 (young) to $7\frac{3}{4}$ (adult), caudal $6\frac{1}{2}$ (young) to $7\frac{3}{4}$ (adult), and height of body 8 (young) to $9\frac{1}{2}$ (adult) in total length.

Barbels : A short erect pair over the nostrils, three pairs on the mouth.

Fins : Root of pelvics nearer to that of pectorals than of the anal. Caudal rounded, in larger specimens higher than the body.

Colour : Anterior third of the fish dusky above and pale beneath, the remainder pale with a series of about 20 dusky transverse bands approximately equal to the interspaces. These increase in length and depth of colour posteriorly; the first being no more than a spot in the region of the lateral line. At the dorsal fin they meet over the back and, at the anal, completely encircle the body. Some are confluent or forked. In smaller fish they are about 17 in number, begin further back, do not meet across the belly and are wider in proportion to the pale interspaces. Fins pale, the dorsal with two indistinct dusky bars. Caudal fin with concentric bands of the following colours (beginning from the posterior margin) pale, red, dusky red, dusky, pale, dusky. In smaller fish the whole caudal fin is reddish with three or four indistinct bands.



TEXT-FIG. 60.—*Aborichthys elongatus* Hora. (Copied from *Rec. Ind. Mus.*)

Size : Our longest $3\frac{3}{4}$ inches.

Habitat : Our specimens from the Riyang River (at 2,000 ft. elevation) and streams in the Terai.

Note :—This species is closely allied to *A. kempfi* (described by Chaudhuri from the Abor and Garo hills and Upper Burma, *Rec. Ind. Mus.*, VIII, p. 245) to which some of our specimens were at first referred. It is distinguished on the following points (*Rec. Ind. Mus.*, XXII, p. 735, 1921) :—

A. kempfi, Chaudhuri.

1. The snout is a little shorter than the post-orbital part of the head.
2. There are 7 branched rays in the dorsal fin.
3. The dorsal is equidistant between the tubular nostrils and the root of the caudal.

A. elongatus, Hora.

1. The snout is almost equal to the post-orbital part of the head.
2. There are only six branched rays in the dorsal fin.
3. The dorsal is equidistant from the tip of the snout and the base of the caudal fin in the adult specimen; in younger specimens it is somewhat nearer to the tip of the snout than to the base of the caudal.

Acanthophtalmus pangia (Ham.), *F.B.I.*, Nos. 240 and 241
Apua fusca.

Note.—Some individuals of this species have, others have not, a pair of pelvic fins (see Hora in *Nature*, Sept. 20th, 1930, p. 435). Day allotted these two forms to separate Genera, *Acanthophtalmus* (with pelvics) and *Apua* (without pelvics).

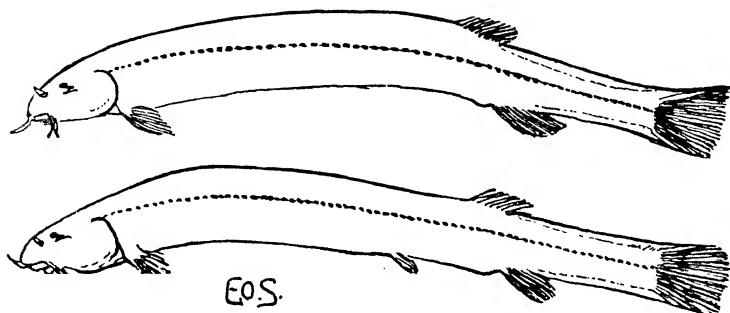
Bengali (according to Day) : *Pangya* পাঙ্গা.

D. 2/6. P. 10. V.¹ 6-7. A. 2/5. C. 17. Barbels 3 pairs.

Body elongate and laterally compressed. Eyes minute. An erectile, bifid, suborbital spine. 'Length of head $7\frac{1}{2}$ -8, of caudal 8, height of body $7\frac{1}{2}$ -8 in the total length.' (Day)

Barbels : One rostral and two maxillary pairs, the longest 2/5ths the length of the head.

Fins : Dorsal just in front of the anal ; caudal rounded.



TEXT-FIG. 61.—*Acanthophtalmus pangia* (Hamilton), without and with small pelvic fins.

Colour : Brownish-yellow without any markings.

Size : Our longest 1.6 inches ; Day gives $2\frac{1}{2}$ inches.

Habitat : Fairly common in the Sevoke River near its junction with the Tista. Day gives—'North-east Bengal, the northern portions of Pegu and Upper Burma.' He mentions a specimen from below Darjeeling collected by Mr. Mandelli.

Habits : In the Sevoke River Hora found the form without pelvics among the debris at the bottom of still pools and the form with pelvics in the swift water of pebbly runs. He therefore suggests that the two forms may be correlated with their habitats.

Botia dario (Ham.), *F.B.I.*, No. 230.

Meehi : *Balabotia*.

Note.—The *B. geto* of Hamilton proves to be a young of this species ; *B. geto* of Day is the next species.

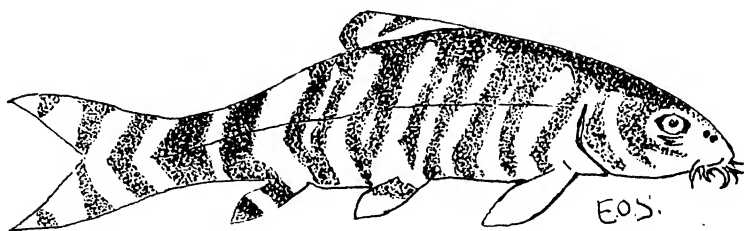
¹ Pelvics present or absent.

D. 3/9-10. P. 14. V. 8. A. 2/5-6. C. 19. Barbels 4 pairs.

The body is laterally compressed; in profile a typical loach though it tapers a little more towards the abruptly forked caudal fin than some other loaches. The back is sharply arched from the dorsal fin to the mouse-like head with short, downward-pointed barbels. A strong, bifid, backward curved spine is countersunk below each eye. The scales are minute and hardly noticeable. Length of head $4\frac{1}{2}$ -5, of caudal 5, height of body 5 in the total length. Eye 5 diameters in the length of the head.

Barbels : Four pairs, the longest hardly reaching the orbit, tapering.

Fins : The dorsal fin begins just before the pelvics.



TEXT-FIG. 62.—*Botia dario* (Hamilton).

Colour : The body is encircled by seven or more dark brown oblique bands almost straight separated by yellowish ones of about the same width. There are three more or less broken dark bands on the caudal fin.

Size : Our largest specimen is $3\frac{1}{2}$ inches long.

Habitat : Hitherto we have only found this fish in the Singhimari stream (clear) and Chel River in the Apalchand forest (Western Duars). Day gives the distribution as Bengal, the N.W. Provinces, Assam, and Cachar.

***Botia dayi* Hora, F.B.I., No. 231 *Botia geto*.**

1932. *Botia dayi*, Hora, *Rec. Ind. Mus.*, XXXIV, p. 571.

Nepalese : *Getu* गेटु or *Singhi* सिंही.

Note.—This species is the *B. geto* described and figured in Day's *Fishes of India*, but the fish so named by Hamilton proves to be a young of *B. dario* (Ham.).

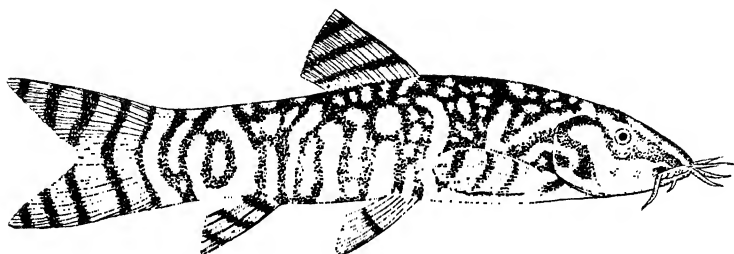
D. 3/9. P. 14. V. 8. A. 2/5. C. 19. Barbels 4 pairs.

The body is laterally compressed; in profile a typical loach tapering but little towards the abruptly forked caudal fin. The line of the belly is almost straight and the back arched sharply from the dorsal fin to the mouse-like head with short, downward-pointing barbels. A strong, bifid, backward-curved

spine is countersunk below the eye but 'as a rule not extending to below the posterior margin of the orbit.' (Day) Length of head $4\frac{1}{2}$ (Day $5\frac{1}{4}$), of caudal 5, height of body $4\frac{1}{2}$ (Day 5 to $5\frac{1}{4}$) in the total length. Eye diameter 7 in the length of the head.

Barbels: Shorter than in *B. dario*.

Colour: Somewhat like *B. dario* but the bands are irregular and partly confluent enclosing variously sized roundish yellow and bluish blotches. Sometimes there are no lighter bands and the whole body is marbled with small blotches of the lighter colour. Pelvic fins with two, the other fins and each lobe of the sharply forked caudal with three dark cross-bands. Small fish are the darkest.



TEXT-FIG. 63.—*Botia dayi* Hora.

Size: Our largest specimen 4.8 inches long.

Habitat: Hitherto we have only found this fish in the Mahanadi. Day gives—'From Sind, through the Punjab, Himalayas, Valley of the Ganges, Jumna, Sone River, and Assam.'

***Lepidocephalichthys annandalei* Chaudhuri.**

1912. *Lepidocephalichthys annandalei*. Chaudhuri, *Rec. Ind. Mus.*, VII, p. 442, pl. xl, figs. 3, 3a, 3b.

Bengali: *Poia* পোয়া.

D. 1/7. P. 7-8. V. 7. A. 1/6. C. about 24-26. Barbels ? pair.

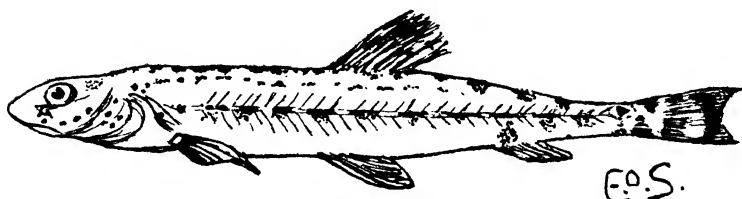
Body elongate and cylindrical. A preorbital bifid spine present. Length of head 6, caudal $5\frac{1}{2}$, height of body 8 in the total length.

Barbels: Very minute, only the maxillary pair distinct.

Fins: Commencement of dorsal barely posterior to that of the pelvics; hinder margin of caudal concave.

Colour: Very light brown on back, silvery on flanks and white beneath. On this brown colour is a pattern of minute dark brown specks. By their density or sparseness along the dorsal ridge they form a series of about eight very short transverse bars each about $\frac{1}{3}$ rd of the breadth of the interspace, below the dorsal ridge these specks are fewer and form an irregular wavy pattern above the lateral line and, along it, a series of about

11 short black dashes with equal interspaces. There are rather larger dark brown dots on the sides of the head and a distinct, more or less triangular, black spot surrounded by a yellow patch on the upper half of the root of caudal. There are several dark brown bands across dorsal and caudal.



TEXT-FIG. 64.—*Lepidocephalichthys annandalei* Chaudhuri.

Size: Our longest specimen was 1.5 inches, another 1.1 inches contained fully formed eggs and must therefore have been mature.

Habitat: Hitherto we have only found it in the Panchenai River near Matighara. Chaudhuri described the type specimen from 'Eastern Himalayas.'

Lepidocephalichthys guntea (Ham.), *F.B.I.*, No. 237.

Plate 2, fig. 2.

Bengali (local): *Poia* পোয়া, (South Bengal), *Gunite* গুন্ডে; Rabha: *Na-mucha* or *Na-mochon*; Chota Nagpuri: *Gitu* गीटू.

D. 2/3. P. 8. V. 7-8. A. 2/5. C. 16. Barbels 3 pairs.

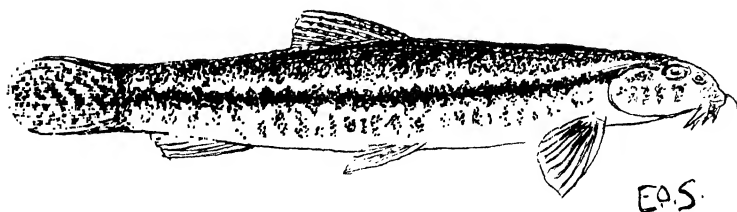
Lower profile of the snout horizontal, upper profile almost a quadrant. Upper and lower profiles of the body nearly parallel but body deepest in front of dorsal fin. A large erectile, bifid spine countersunk below the eye. Head partly scaled. Length of head 6 (*Day* $6\frac{1}{2}$ – $6\frac{3}{4}$), caudal 6, height of body 6 (*Day* $5\frac{3}{4}$ – $6\frac{1}{2}$) in the total length.

Barbels: Short, though longer than in *Somileptes*. 'A fleshy flap from the lower surface of the mandible on either side joins the maxillary barbel, and each has one or two barbels along its edge.' (*Day*)

Fins: Dorsal almost opposite pelvics; caudal entire ('generally' *Day*). *Scales* very minute.

Colour: The ground colour is dark brown on the dorsal ridge the rest being yellowish white with dark brown specks coalescing to form a pattern of darker and lighter longitudinal bands. The central one of these is darkest forming an almost black flank-stripe about $\frac{1}{4}$ th of depth of body and extending from the upper part of the gill opening to the root of caudal. This is flanked above and below by narrower light stripes and these again by interrupted brown bands the upper one darkening

into the brown of the dorsal ridge and the lower fading into the white of the belly. The edges of all bands are wavy and the fainter ones interrupted so as to suggest an indistinct transverse pattern in a series of about 25. The specks coalesce to form five pale-brown patches on the head and a vertical dark bar across the base of caudal. This bar is darkest at its upper end, sometimes approximating to a spot. The fins are yellowish, dorsal and caudal with a speckled pattern, that on the latter suggesting a continuation of the flank-stripe. We have not obtained any specimen with the pattern represented in Day's figure.



TEXT-FIG. 65.—*Lepidocephalichthys guntea* (Hamilton).

Habitat: Gravelly or muddy streams and tanks in the Terai and Duars. Day gives—'Punjab, throughout India (except Mysore and south of the Kistna, and also the Malabar Coast). I have them from Darjeeling, and several localities on the Himalayas.' (Day)

KEY TO GENUS NEMACHILUS IN THIS LIST.

(From Dr. Hora's paper in the *Records of Indian Museum*, XXXVII.)

About 14 branched rays in Dorsal. (Body irregularly blotched; Caudal entire or slightly emarginate) *N. botia* (p. 71)

Not more than 8 branched rays in Dorsal :—

Body without vertical bands :—

Body with one or two longitudinal series of spots *N. corica* (p. 72)

Dorsal surface and sides with a uniform dull grey colour—
N. shebbearci (p. 77)

Body with vertical bands :—

Lateral line incomplete :—

Caudal without bands; vertical bands few, broad and saddle-shaped, not extending to ventral surface *N. devdevi* (p. 72)

Caudal with 4 or more bands; body encircled by a number of bands *N. multifasciatus* (p. 73)

Lateral line complete :—

Dorsal surface and sides dark with narrow yellowish bands—

N. savona (p. 75)

Dorsal surface and sides pale-olivaceous with dark, vertical bands separated by broad yellowish interspaces :—

Well-marked nasal barbels—*N. rupicola* var. *inglisi* (p. 74)

Nasal flaps not produced into barbels :—

Dorsal and Caudal marked with numerous, irregular, narrow bands .. *N. multifasciatus* (p. 73)

Dorsal with or without a row of spots; Caudal with or without 1-3 V-shaped fairly broad markings :—

Body with a few broad and bold bands encircling it; a broad black band at base of Caudal; Ventrals extending to anal opening .. *N. beavani* (p. 70)

Body with narrow, incomplete bands not extending to ventral surface; a narrow, black bar at base of Caudal; Ventrals not extending to anal opening—

N. scaturigina (p. 76)

In the above key *N. multifasciatus* is given in two places as it may have a complete or incomplete lateral line.

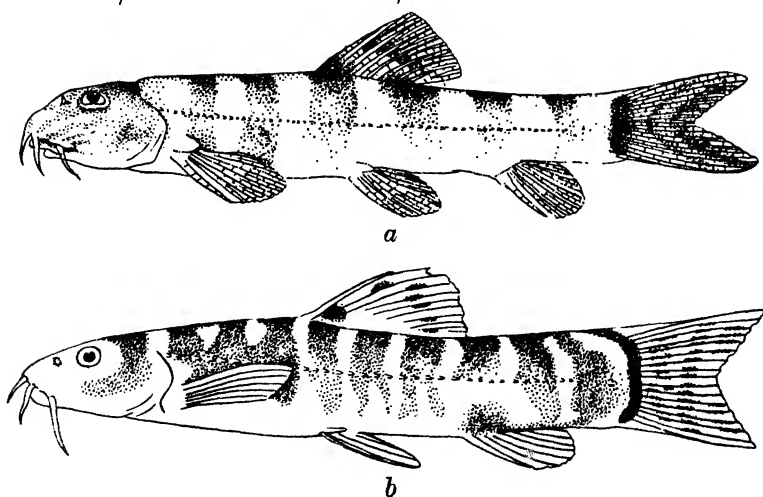
[Since the revision of the Eastern Himalayan species of *Nemachilus*, considerable fresh material became available from the Naga Hills, Assam. The range and specific limits of some of the species listed in the above key had to be revised. For the purpose of this paper, however, the treatment of the species as given below will be quite helpful to the readers.—*S. L. Hora*.]

***Nemachilus beavani* Günther.**

1868. *Nemachilus beavani*, Günther, *Cat. Fish. Brit. Mus.*, VII, p. 350.

Not the *N. beavani* of Day, *Journ. Linn. Soc. (Zool.)*, XI, p. 529 (1873).

D. 2/8. P. 10. V. 8. A. 2/5. C. 19.



TEXT-FIG. 66.—*Nemachilus beavani* Günther. (Copied from *Rec. Ind. Mus.*)

a.—Sketch of type-specimen in British Museum.

b.—Sketch of fresh-specimen from Darjeeling-Himalayas.

This fish has a shape peculiar to some loaches that is to say, when viewed from above, it tapers smartly from the gills to the

tail but, when viewed from the side, it tapers gradually from the base of the caudal fin towards the snout. Hora notes that specimens taken in fast-flowing streams have a well-developed fleshy appendage in the axil of the pectoral fin.

Fins: The caudal fin is distinctly lobed. The pelvic fins are provided with fleshy appendages also.

Colour: The ground colour is yellowish with 7 transverse brown belts which are wider than the interspaces between them. These belts are continuous over the back and those in front of the dorsal fin are sometimes broken up to form numerous narrow bands. There is, in addition to the belts mentioned, a conspicuous dark band at the base of the caudal fin.

Size: Our longest was $1\frac{1}{3}$ inches.

Habitat: Common in small streams at the foot of the hills.

Nemachilus botia (Ham.), *F.B.I.*, No. 247.

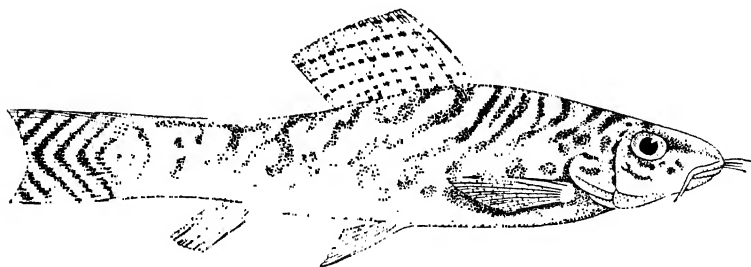
Plate 2, fig. 1.

Hindi (in Bihar) *Natwa* नटवा.

D. 2/10-12. P. 11. V. 8. A. 2/5. C. 17. Barbels 3 pairs.

A strongly built fish not unlike *Botia dario* in shape but somewhat broader towards the head. Below the eyes, where the prickles occur in *B. dario*, there are similar cartilaginous, but not bony, processes in the males of this species.

Fins: The caudal fin is slightly but distinctly lobed.



TEXT-FIG. 67.—*Nemachilus botia* (Hamilton).

Colour: The colouring of this species bears a resemblance to that of *Somileptes gongota*. It is mottled from the dorsal ridge to the lateral line which is marked by a darker longitudinal band having 9 or 10 downward projections which alternate with a series of blotches below the lateral line. The dorsal fin is speckled and the caudal has similar speckles arranged in wavy, but more or less vertical, lines. It appears to be a variable species.

Size : Our longest is just over 3 inches.

Habitat : Clear streams of the Terai and Duars.

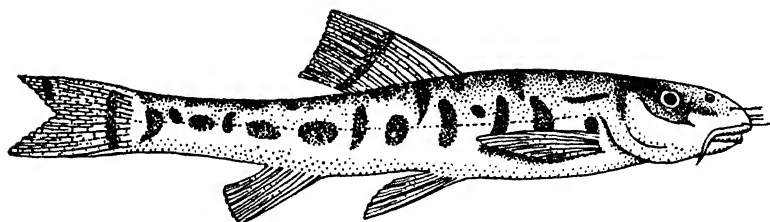
Nemachilus corica (Ham.), *F.B.I.*, No. 253.

This fish is recorded from the N.E. Bengal but we have never found it. We give Day's description of it verbatim :—

' Bengali : *Khorika* খরিকা.

' D. 10(2/8), P. 13. V. 8. A. 7(2/5). C. 17.

' Length of head $5\frac{1}{2}$ in the total length. *Eyes* in the middle of the length of the head. *Barbels*—thin, the external rostral pair longer than the orbit. *Fins*—the dorsal commences anterior to the ventral (i.e. the pelvics) and nearer to the snout



TEXT-FIG. 68.—*Nemachilus corica* (Hamilton).

' than to the base of the caudal, which last is lobed in its posterior half. *Scales*—visible in the posterior half of the body. *Colour*—bluish, with about thirteen black blotches along the middle of the side, and smaller ones above and descending to between them ; usually a silvery band along the middle of the side.

' *Habitat*, N.E. Bengal—Punjab, and Assam.'

Nemachilus devdevi Hora.

1935. *Nemachilus devdevi*, Hora, *Rec. Ind. Mus.*, XXXVII, p. 54,
pl. iii, figs. 5, 6.

D. 2/8. P. 10. V. 6–8. A. 2/5. C. 16.

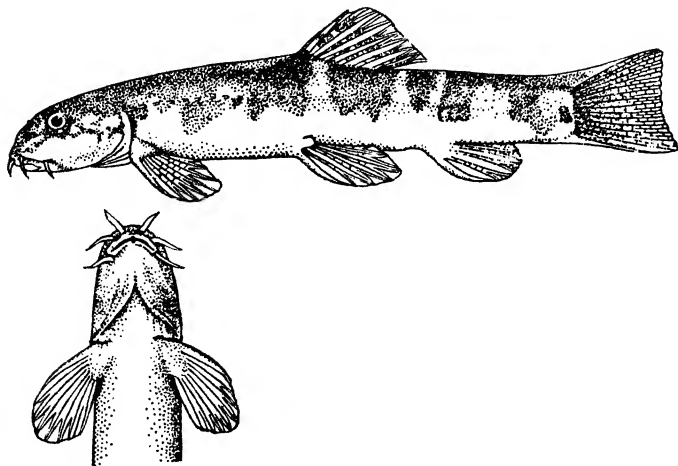
A slender little fish. The upper profile is slightly arched and the lower profile straight.

Scales : There are some very indistinct scales embedded in the skin.

Fins : The pelvic fins possesses a well-developed appendage in the axil.

Colour : The ground colour is yellowish with 7 to 9 brown belts which are much wider than the interspaces between them.

They are continuous over the back but only reach to just below the lateral line on the sides, where their ends are rounded off. There is usually a deep black spot or short bar at the base of the caudal fin.



TEXT-FIG. 69.—*Nemachilus devdevi* Hora. (Copied from *Rec. Ind. Mus.*)

Size: Our longest was nearly $1\frac{3}{4}$ inches.

Habitat: Small streams at the foot of the hills.

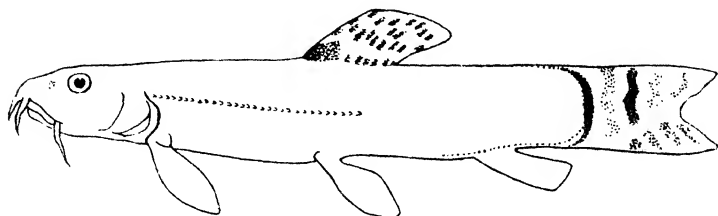
***Nemachilus multifasciatus* Day, *F.B.I.*, No. 257.**

D. 2/8. P. 11. V. 9. A. 2/5. C. 18. Barbels 3 pairs.

This fish was described by Day from 'Darjeeling and Assam' but has never been collected from these places since. Hora notes (*Rec. Ind. Mus.*, XXXVII, 1935) that the Siamese and Burmese specimens recorded under this name by Vinciguierre and Mukerji (vide *Journ. Bombay Nat. Hist. Soc.*, 15th Dec., 1933) are not the same species and he proposes the name *N. vinciguierrei* for them. Day describes the lateral line as complete but Hora notes that in Day's Assam specimen, in the British Museum, it only reaches the line of the ventrals and his Darjeeling specimen, in the Indian Museum, is in poor condition.

Colour: Day gives—'Vertical bands, as wide as the 'ground colour, pass from the back to the lower surface of the 'abdomen; those between the head and the dorsal fin are 'numerous, while there are about five posterior to the latter: 'in some examples the anterior bands coalesce. A dark band 'at the base of the caudal and dark marks on the head radiating

from the eye. Fins yellow, the dorsal with four bands of spots and an equal number or more on the caudal. Ventral and anal 'with two bands each.' Hora notes (*op. cit.*)—'The chief distinguishing feature of *N. multifasciatus* lies in the fact that the dorsal and caudal fins are provided with many rows of spots which are sometimes irregularly distributed. The only other



TEXT-FIG. 70.—*Nemachilus multifasciatus* Day. (Copied from *Rec. Ind. Mus.*)

species which shows this character is Day's *savona* for which I have proposed the name *dayi*. The two species can be readily distinguished by the colouration of the body—narrow, yellowish interspaces between the bands in *dayi* and wide, pale interspaces between the bands in *multifasciatus*.'

***Nemachilus rupicola* var. *inglisi* Hora, *F.B.I.*, No. 254
(in part).**

1935. *Nemachilus rupicola* var. *inglisi*, Hora, *Rec. Ind. Mus.*, XXXVII, p. 58, pl. iii, figs. 9, 10.

D. 27. P. 12. V. 8. A. 1/5. C. 16. Barbels 3 pairs.

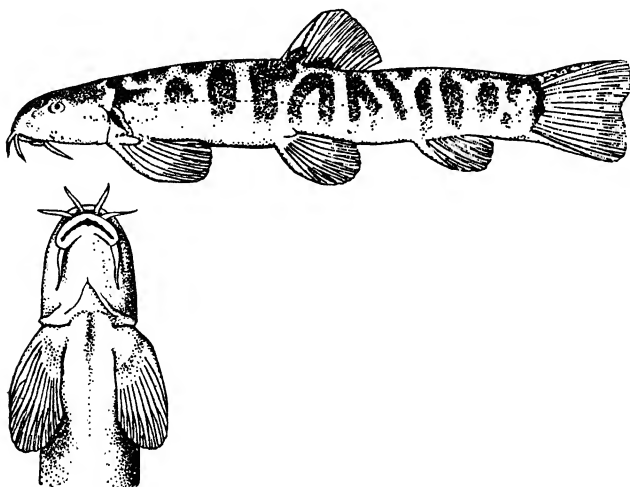
Hora distinguishes this variety from the typical *N. rupicola* of the Western Himalayas by its more strongly developed nasal barbels and the position and structure of the paired fins, the outer rays of which are provided with adhesive pads on the under-surface—apparently an adaptation for life in rapid currents. A stoutly built little fish, roughly cylindrical in front, except for the flattened belly, and tapering towards the tail which is slightly flattened in the vertical plane. The dorsal profile is slightly arched and the ventral straight.

Fins: The paired fins are horizontal; the caudal square or faintly lobed.

Scales: There are indistinct scales embedded in the skin on the upper surface; none on the lower.

Colour: The ground colour is yellowish with 14 to 16 brown transverse belts, rather wider than the interspaces between

them. These encircle the whole of the body from the gills to the caudal fin. Those behind the dorsal fin are almost continuous across the back but those in front of it break up into isolated blotches on the fore part of the back. The top of the head is closely mottled with finer blotches. The young lack the belts



TEXT-FIG. 71.—*Nemachilus rupicola* var. *inglisi* Hora. (Copied from *Rec. Ind. Mus.*)

Size : Our largest was nearly 3 inches.

Habitat : Streams at the foot of the hills.

***Nemachilus savona* (Ham.).**

1935. *Nemachilus savona*, Hora, *Rec. Ind. Mus.*, XXXVII, p. 56, pl. iii, figs. 3, 4.

Not the *N. savona* of Day, for which Hora has proposed the name *N. dayi*.

D. 3/8. P. 9. V. 7. A. 2/5. C. 20. Barbels 3 pairs.

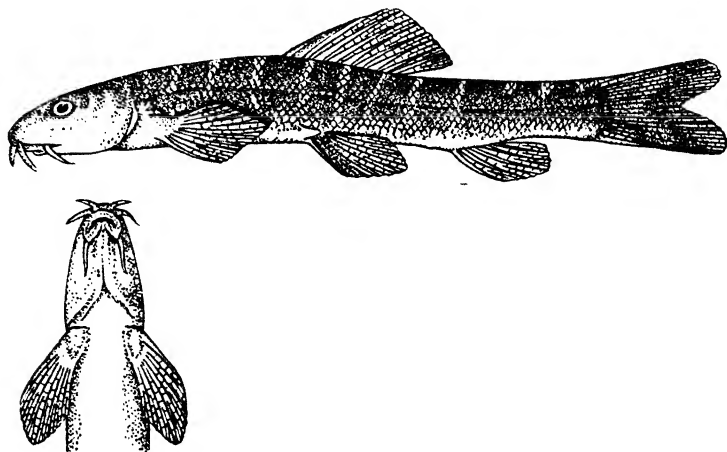
A slender little fish pointed at both ends. The upper profile is slightly arched and the lower profile straight. The belly is slightly flattened.

Fins : The paired fins are fan-shaped, horizontal and pointed in the middle.

Colour : There are 9 or 10 dark brown belts in this species which are considerably wider than the interspaces between them and obliterate them in some places. The dark belts meet under

the tail and some of them are forked where they pass over the back. The head is dark above and pale with some dark dots beneath. There is a vertical black mark at the base of the caudal fin. In some specimens there are one or two V-shaped bands on the caudal fin.

Size : Our longest was just over $1\frac{1}{4}$ inches.



TEXT-FIG. 72.—*Nemachilus savona* (Hamilton). (Copied from *Rec. Ind. Mus.*)

Habitat : Common at Sevoke and Siliguri in small clear streams. Hamilton obtained the specimens from which he described the species in the Kosi at Nathpur in the extreme north-east of the Bhagalpur District close to the Purnea boundary.

***Nemachilus scaturigina* (McClell.).**

1935. *Nemachilus scaturigina*, Hora, *Rec. Ind. Mus.*, XXXVII, p. 64, pl. iii, figs. 7, 8.

D. 2/7. P. 10. V. 8. A. 2/5. C. 19. Barbels 3 pairs.

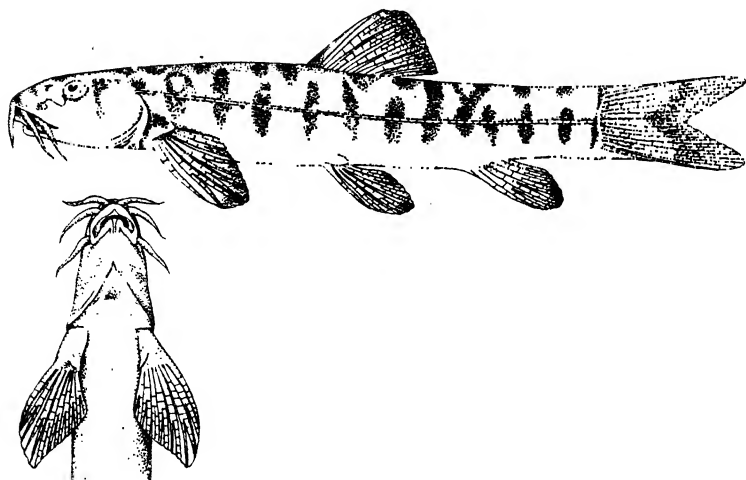
A more slender fish than *N. rupicola* and with a more pointed snout.

Fins : The caudal fin is square or slightly lobed.

Scales : Inconspicuous scales, embedded in the skin, are mostly on the hinder end of the body and only on the under surface.

Colour : The ground colour is yellowish with 9–12 transverse brown belts but, unlike those in *N. rupicola*, some of these

pass unbroken across the back and none of them reach the belly ; the belts in this species are definitely narrower than the interspaces between them and the brown colour is paler than in *N. rupicola*, and sometimes some of the belts are reduced to isolated blotches. There is a black spot at the base of the first ray of the dorsal fin.



TEXT-FIG. 73.—*Nemachilus scaturigina* (McClelland). (Copied from *Rec. Ind. Mus.*)

Size : Our longest was just over 2 inches.

Habitat : Small streams near the foot of the hills. It is not very common.

Nemachilus shebbearei Hora.

1935. *Nemachilus shebbearei*, Hora, *Rec. Ind. Mus.*, XXXVII, p. 52, pl. iii, figs. 1, 2.

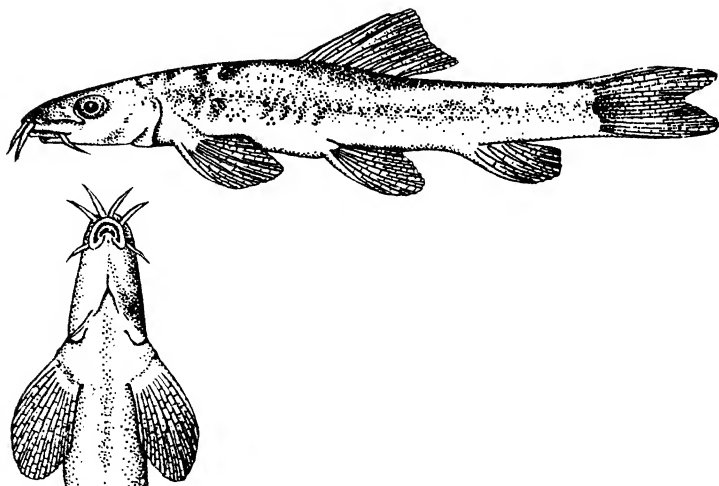
D. 2/8. P. 10. V. 8. A. 1/6. C. 18. Barbels 3 pairs.

The body is low and the head long and pointed ; the upper profile is arched and the lower profile straight. The belly is flattened. In general appearance this fish resembles *Homaloptera bilineata* or *H. modesta*.

There is a bony process below the anterior border of the eye, a characteristic feature of the males of several species of *Nemachilus*.

Colour : Dull black on the back and sides, with faint indications of colour bands in places ; pale olivaceous beneath.

Size : The solitary specimen known of this species at present measures just over $1\frac{3}{4}$ inches.



TEXT-FIG. 74.—*Nemachilus shebbearei* Hora. (Copied from *Rec. Ind. Mus.*)

Habitat : The specimen was found by Dr. Hora among a large collection of fish sent by us to the Indian Museum from the Terai and Duars and, unfortunately, there was no note of its origin.

Somileptes gongota (Ham.), *F.B.I.*, No. 236.

Bengali: *Ghor-poia* ঘরপোয়া (a name also applied to *Garra gotyla*); Mechi: *Mushra*.

D. 3/8. P. 1/10. V. 2/6. A. 2/5. C. 16. Barbels 3 pairs.

The upper profile of the snout is straight or slightly concave rising abruptly to above the eyes which are close together near the top of the head. From this point the body tapers gradually to the peduncle of the tail. There is a small bifid suborbital spine reaching to below the middle of the orbit. Length of head $5\frac{1}{4}$, height of body $7-7\frac{1}{2}$ in the total length.

Barbels : One small erect pair above the nostrils (not described or figured by Day) besides the pair at the sides of the snout and the maxillary pair.

Fins : The dorsal fin begins 'opposite the root of the inner ventral (i.e. pelvic) ray'. (*Day*) Caudal entire.

Scales : Minute.

Colour : Light brown speckled with darker above, yellowish or whitish beneath. A variable pattern along the sides usually consisting of a series of about five large brown blotches with

light edges sometimes connected with oblique dark stripes or interspersed with smaller dark blotches. Two dark patches on each cheek. Fins yellowish, dorsal and caudal with dark spots arranged more or less regularly in transverse rows.

Size: Our largest is recorded as 3.9 inches long, but Shaw notes that we have had them larger.



TEXT-FIG. 75.—*Somileptes gongota* (Hamilton).

Habitat: Gravelly and muddy streams in the Terai and Duars. Day gives—'Assam, Bheer Bhoom, and Khasia hills.'

See D. D. Mukerji's note on this species, *Rec. Ind. Mus.* XXXIV, pp. 125-129 (1932).

Group VII.—THE CAT-FISHES.

KEY TO SUB-ORDER SILUROIDEA (CAT-FISHES) IN THIS LIST.

No spine in Dorsal; no adipose fin; Anal of 45 rays or more:—

Four pairs of barbels:—

Family CLARIIDÆ.

Dorsal long (over 60 rays) ..	<i>Clarias batrachus</i> (p. 80)
Dorsal short (6 or 7 rays) ..	<i>Heteropneustes fossilis</i> (p. 81)

Two pairs of barbels; Dorsal absent or short (6 rays or less).

Family SILURIDÆ.

Eye above level of mouth:—

Caudal not forked ..	<i>Silurus cochinchinensis</i> (p. 84)
Caudal forked ..	<i>Wallago attu</i> (p. 84)

Eye behind angle of mouth:—

Longest barbels reach Pelvics—	<i>Callichrous bimaculatus</i> (p. 82)
Longest barbels reach Pectorals	<i>Callichrous pabda</i> (p. 83)

A spine in Dorsal. *Note*:—In most genera this is bony and unmistakeable; in *Sisor*, *Pseudecheneis*, *Euchiloglanis*, and *Olyra* it is weak but, in these 4 genera the Anal is short (less than 20 rays) and there is an adipose fin, two points which separate them from genera with no spine in Dorsal:—

A continuous margin of fin above, below, and round the end of the tail:—

Family CHACIDÆ.

One species only ..	<i>Chaca chaca</i> (p. 85)
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Caudal at the end of the tail only:—

Anal long (28 rays or more); Adipose small or absent:—

Family SCHILBEIDÆ.

Four pairs of barbels :—

Dorsal much in advance of Pelvics :—

Longest barbels reach Pectorals—

Longest barbels reach Pelvics .. *Pseudeutropius murius* (p. 88)
 Dorsal practically opposite Pelvics—*Eutropiichthys vacha* (p. 86)
 One pair minute barbels .. *Silonia silondia* (p. 89)

Two pairs of barbels :—

Family PANGASIIDÆ.

One species only .. *Pangasius pangasius* (p. 86)

Anal short (less than 20 rays) ; Adipose well developed :—

Two nostrils (one behind the other on each side) close together with a barbel between them :—

Family SISORIDÆ (for key, see p. 96).

Two nostrils (on each side) far apart, a barbel near the hindmost :—

Teeth on the palate as well as in the jaws :—

Family BAGRIDÆ (for key, see p. 89).

Teeth in the jaws but not on the palate :—

Family AMBLYCEPIDÆ.

One species only .. *Amblyceps mangois* (p. 95)

Clarias batrachus (Linn.), *F.B.I.*, No. 121 *Clarias magur*.

Plate 3, fig. 10.

Bengali : *Magur* মাগুর.

D. 62-76. P. 1/8-11. V. 6. A. 45-58. C. 15-17.
 Barbels 4 pairs.

Head vertically and tail laterally compressed. It is distinguished from all our other cat-fish by having a long (many-rayed) dorsal fin. Length of head $5\frac{1}{2}$ -6, of caudal $8\frac{3}{4}$ -9, height of body $6\frac{1}{2}$ - $7\frac{1}{2}$ in the total length.

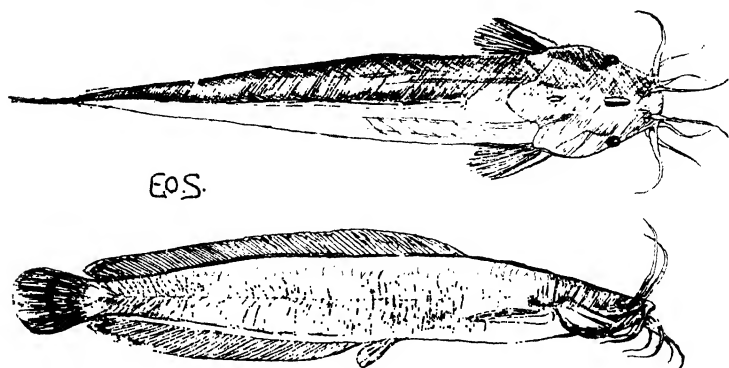
Barbels : The longest (maxillary) reaching base of pectorals.

Fins : Pectoral spine finely serrated but covered with skin. Caudal rounded.

Colour : Either a uniform rich reddish-brown or a uniform greyish-black. Fish of both colours are found together, no intermediate shades occur and, as far as we know, there is no other difference between them. There are one or more concentric arcs of a deeper shade on the caudal, where there are more than one that nearer the base is more distinct.

Size : Our longest 11 inches. Day says—'attains a foot and a half'.

Habitat : Terai and Duars ; usually in mud. Day gives—
‘ Fresh and brackish waters of the plains of India, Burma, Ceylon, and the Malay Archipelago.’



TEXT-FIG. 76.—*Clarias batrachus* (Linn.).

Habits : Being able to breathe air, it can survive for a long time out of water.

Heteropneustes fossilis (Bloch.), *F.B.I.*, No. 133 *Saccobranchus fossilis*.

Plate 3, fig. 9.

Bengali : *Singhi* শিংগি.

D. 6-7. P. 1/7. V. 6. A. 60-79. C. 19. Barbels 4 pairs.

Head flat and rather wide ; the snout almost chisel-like. The body tapers uniformly in the horizontal plane from the gills to the caudal fin. In the vertical plane the back is almost a straight line from snout to tail while the ventral outline is bowed ;



TEXT-FIG. 77.—*Heteropneustes fossilis* (Bloch.).

this effect is heightened by the shape of the long anal fin. Day gives :—‘ Length of head from $5\frac{1}{2}$ -7, of caudal from about 9-14, height of body (greatly depending upon food or season) from 5-8 in the total length.’

Barbels : Maxillary pair reach the pectorals or further.

Fins : The sharp, serrate pectoral spines are reputed to be poisonous and broken off by fishermen. Caudal rounded.

Colour : Dark purplish-brown, almost black, the young reddish-brown. Day says there are sometimes two longitudinal yellowish bands ; we have not seen these.

Size : We have taken them up to about 9 inches long. Day says they attain a foot or more.

Habitat : Rivers and tanks in the Terai and Duars—usually in mud. Day gives—‘ Fresh waters of Sind, India, Ceylon, Burma, and Cochin China.’

Day says the eggs are pea-green.

[*Callichrous bimaculatus* (Bloch)], *F.B.I.*, No. 138.

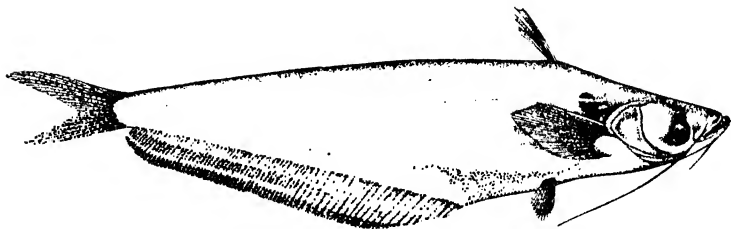
Hindi (Bihar) : *Chechera* चेचरा.

D. 4. P. 1/13. V. 8. A. 2-3/58-72. C. 17. Barbels 2 pairs.

Body elongate and laterally compressed. Very like *C. pabda*, the chief distinctions being the shape of the caudal fins and the length of the barbels. Day gives—‘ Length of head 5-7, of caudal $6\frac{2}{3}$ -7, height of body $5\frac{1}{3}$ - $5\frac{1}{2}$ in the total length.’

Barbels : The longest pair (maxillary) reach the ventral.

Fins : Caudal forked, the lobes sharply pointed.



TEXT-FIG. 78.—*Callichrous bimaculatus* (Bloch).

Colour : We have not seen a live specimen. Day says—‘ Silvery shot with purple, a black spot on the shoulder behind the gill-opening and above the middle of the pectoral fin ; in some specimens this black spot is much better defined than in others.’¹ Occasionally the caudal fin is tipped with black.’

Size : Our only specimen is 5.7 inches long. Day says they attain at least a foot and a half in length.

Habitat : We have only seen this fish in Siliguri bazaar. Day gives—‘ The fresh waters of Sind, and from the Punjab throughout India, Ceylon, and Assam to the Malay Archipelago

¹ Note.—Our notes say : silvery with two black spots behind gill-opening ; sometimes faint.

and beyond. Sometimes observed in Burma, according to Col. Tickell, within tidal influence.'

Callichrous pabda Ham., *F.B.I.*, No. 142.

Plate 3, fig. 7.

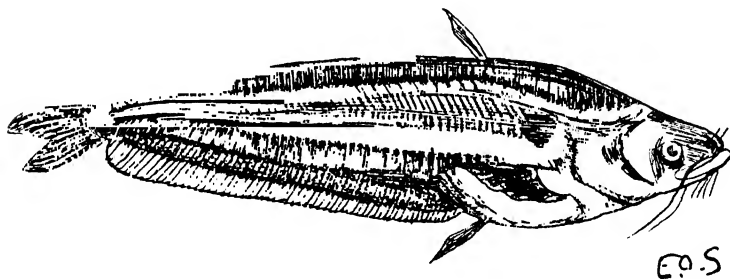
Bengali: *Pabda* পাবদা; Mechi: *Tapugulinda*.

D. 4-5. P. 11-13. V. 8. A. 3/52-58. C. 18. Barbels 2 pairs.

Whole body laterally compressed, dorsal outline only slightly humped, ventral outline distinctly bowed. The belly, which is situated far forward, is usually distended and bulges downwards. Length of head $4\frac{1}{2}$ - $5\frac{3}{4}$, of caudal $7\frac{1}{2}$ -8, height of body $4\frac{1}{2}$ - $5\frac{3}{4}$.

Barbels: The longest (maxillary) pair do not reach beyond the end of the pectorals.

Fins: Caudal forked, both lobes rounded or arching rather than tapering to a point. The whole fin directed slightly downwards. The pectoral spine may be serrated or smooth. (*Day*)



TEXT-FIG. 79.—*Callichrous pabda* Hamilton.

Colour: Variable; the general colour is silvery grey, darkest on the back and fading to white on the belly. In some there are two longitudinal lighter bands one above and one below the lateral line; in others there are confused blotches of light brown, darkest on the back. In all there is a dark oval shoulder-spot about half the length of the pectoral and situated just above the middle of this fin on the lateral line. In some there is another more diffuse spot near the base of the caudal. In life this fish has a very beautiful iridescence being shot with turquoise and mauve on a wide band along the lateral line and with green and gold on the opercle.

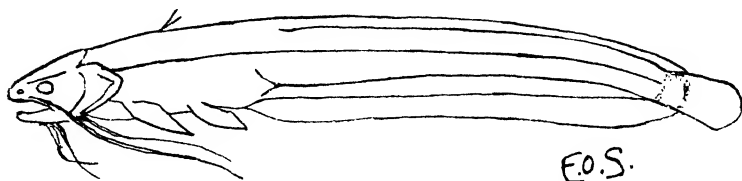
Size: Our longest 4-7 inches.

Habitat: Clear streams as well as muddy pools in the Terai and Duars. Day gives the Indus, Ganges, and Brahmaputra as well as Orissa and Darjeeling. Highly esteemed as food, especially for invalids.

Silurus cochinchinensis Cuv. and Val., *F.B.I.*, No. 126
Silurus afghana and 127.

D. 2. P. 1/13-14. V. 10. A. 70-78. C. 19. Barbels 2 pairs.

Fins: Dorsal rudimentary—consisting of two tiny bristles only. Anal and caudal scarcely united.



TEXT-FIG. 80.—*Silurus cochinchinensis* Cuvier and Valenciennes.

Colour: Purplish brown with traces of dark longitudinal lines.

Size: Our longest 5·7 inches. Day gives 7·2 inches.

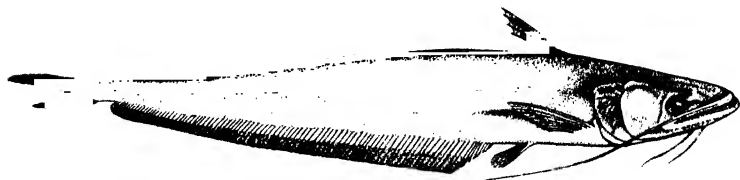
Habitat: Our only specimens were from the Western Duars. Day gives—'Himalayas', his only certainly established locality being 'Darjeeling'. He cites two other sets of specimens both of which, unfortunately, are doubtfully located, one being either from Afghanistan or the Khasi Hills and the other either from Kashmir or Assam.

Wallago attu (Bloch), *F.B.I.*, No. 134.

Plate 3, fig. 5.

Bengali: *Boal(i)* বোয়াল or বোয়ালি; Hindi: *Bowali* बोवाली or (young ones) *Lopchi* लोपची; Rabha: *Na-jek*.

D. 5. P. 1/13-16. V. 8-10. A. 4/82-89. C. 17. Barbels 2 pairs.



TEXT-FIG. 81.—*Wallago attu* (Bloch).

Body elongated and compressed, the dorsal profile being nearly straight. A deep-cleft mouth. Length of head $5\frac{1}{2}$, of caudal 9, height of body $5\frac{1}{2}$ - $6\frac{1}{2}$ in the total length.

Barbels: The maxillary are longest reaching beyond the front end of the anal.

Fins : A gap between anal and caudal which is forked, the upper lobe the longer.

Colour : Uniform grey.

Size : Very large specimens are brought into the district by rail ; our longest local specimen was $2\frac{1}{2}$ feet long. Day says it attains at least six feet.

Habitat : Deep, still pools in clear streams in the south of our area (e.g. Konai and Bania Rivers)—also tanks inside the forest (e.g. Borojhar). Day gives—‘Fresh waters throughout India, Ceylon, and Burma, sometimes within tidal influence.’

Habits : According to Day it is ‘a voracious and not very clean feeder, said mostly to feed at night time.’ Thomas (‘Rod in India’) says they are found in *Mahseer* rivers as well as tanks and recommends fishing for them with live-bait or a spoon. We have never heard of their being taken on rod and line in rivers in our area but, in Bihar, they are taken on rod and line with a live frog in dead water. This is one of the fish known as a ‘fresh-water sharks’ and is not popular in tanks because it eats other fish.

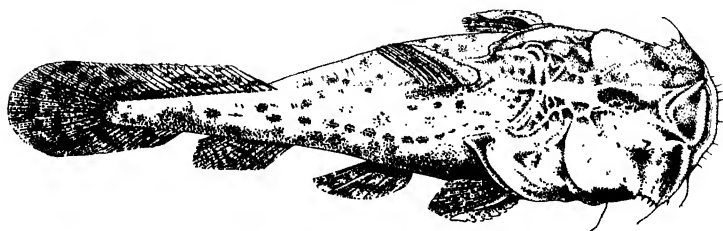
Chaca chaca (Ham.), *F.B.I.*, No. 118 *Chaca lophioides*.

Plate 3, fig. 14.

Bengali : *Chega* চেগা ; Mechi : *Gageb* ; Rabha : *Chega-bakau*.

D. $1\frac{1}{3}$ -4 : 19-25. P. $1\frac{1}{5}$. V. 6. A. 6-10 : 8-12. C. 11.

A flat (vertically compressed) fish with a very wide mouth. The whole upper surface is covered with tubercles and with many short soft spines which also occur along the edge of the lower lip. Its large chin is provided with an adhesive apparatus formed of radiating pleats. Length of head 3, of caudal 6-8, height of body 6 in the total length.



TEXT-FIG. 82.—*Chaca chaca* (Hamilton).

Fins : Dorsal and pectorals each with one strong spine enclosed in skin. Second anal and second dorsal confluent with caudal.

Colour : Dark brown, lighter on the chin ; pectorals and pelvics lighter with dark mottlings.

Size : We have taken them up to 6 inches in length ; Day says they attain 8 inches.

Habitat : Rivers of the Duars and Terai. Day gives—‘ Brahmaputra, Ganges, and Irrawaddy Rivers, and tanks in connection with them ; also some fresh waters of Bombay.’

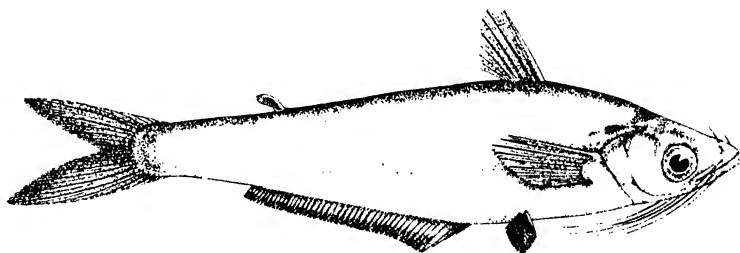
Habits : Hamilton begins his description of this fish with the words—‘ Of all the horrid animals of this tribe the *Cheka* is the most disagreeable to behold ’ and ends with—‘ All persons turn away from it with loathing.’ It is said to bury itself in mud and wound the feet of fishermen with its formidable dorsal spine.

[*Eutropiichthys vacha* (Ham.)], *F.B.I.*, No. 135.

Bengali : *Bacha* or *Bhacha* বাচা or ভাচা ; Hindi : *Bachwa* बचवा .
D. 1/7 | O. P. 1/13-16. V. 6. A. 3-4/42-47. C. 17. Barbels 4 pairs.

Very like *Pseudeutropius murius* in appearance, the distinction being that in *P. murius* the dorsal is much in advance of the pelvics, whereas, in the present species the dorsal and pelvics are practically opposite one another.

Fins : An adipose dorsal always present.



TEXT-FIG. 83.—*Eutropiichthys vacha* (Hamilton).

Colour : Silvery, darker on the back.

Size : Our longest 6·7 inches. Day says ‘ upwards of a foot ’.

Habitat : We have never found it locally but it is frequently brought to Siliguri by rail, probably from Bihar. Day says—‘ From the Punjab through the large rivers of Sind, Bengal, and Orissa ’.

Habits : It is said to take a fly in Bihar and is regarded as good eating.

[*Pangasius pangasius* (Ham.)], *F.B.I.*, No. 152 *Pangasius buchanani*.

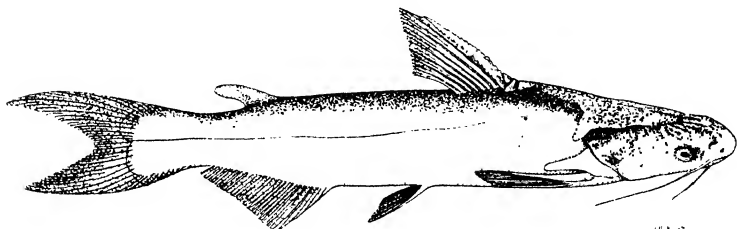
Bengali : *Pangas* পাঙ্গাস.

D. 1/7 | O. P. 1/12. V. 6. A. 31-34(4·5/27-29). C. 10. Barbels 2 pairs.

Head flat. Tail constricted behind the adipose fin but expanding again before the root of the caudal fin. Day gives—Length of head $5\frac{1}{2}$ -6, of caudal fin $5-5\frac{1}{4}$, height of body 4-5 in total length.

Barbels: 'The maxillary reach the base of the pectoral fin; the mandibular are half as long as the head.' (Day)

Fins: Caudal deeply forked, upper lobe slightly the longer.



TEXT-FIG. 84.—*Pangasius pangasius* (Hamilton).

Colour: Our notes say brown but the specimen was not fresh. Day says—'Silvery, darkest along the back and glossed with purple on the sides; cheeks and under surface of the head shot with gold.'

Size: Our only specimen was $2\frac{1}{2}$ feet long; Day says they grow up to 4 feet.

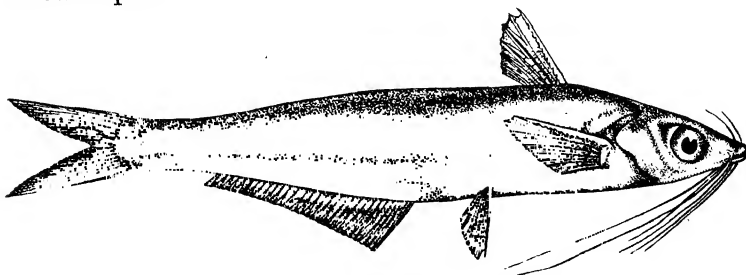
Habitat: Our specimen was from Siliguri bazaar. Day gives—'Large rivers and estuaries of India, Assam, Burma, and perhaps the Malay Archipelago.'

[*Pseudeutropius garua* (Ham.)], *F.B.I.*, No. 151.

Plate 3, fig. 11.

Bengali: *Garua* গারুয়া.

D. $1\frac{7}{7}$ | (0 in young). P. $1\frac{1}{12}$. V. 6. A. $3\frac{26}{33}$. C. 17. Barbels 4 pairs.



TEXT-FIG. 85.—*Pseudeutropius garua* (Hamilton).

Very like *P. murius* but not so silvery and the back is speckled instead of being uniform grey.

Barbels : Longer than in *P. murius*, the longest pair (maxillary) reach the ventral fin. In *P. murius* they are only as long as the head.

Fins : The adipose fin in this species is only present in young fishes and disappears later.

Size : Our longest was 9.6 inches. Day says it attains upwards of two feet.

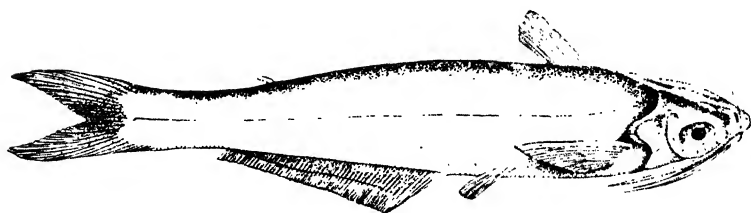
Habitat : The only specimens we have seen were those exposed for sale in Siliguri bazaar. Day gives—'Found generally throughout the larger rivers of Sind, India, Assam, and Burma.'

***Pseudeutropius murius* (Ham.), F.B.I., No. 148.**

Bengali : *Muribacha* মুরিবাচা ; Nepalese : *Cherki* चरकी .

D. 17 | 0. P. 11 (1/10 Day). V. 6. A. 3/35-40. C. 17. Barbels 4 pairs.

Whole body laterally compressed ; dorsal and ventral outlines approximately equally curved. Very like *P. garua* the chief difference being that in *P. garua* the longest barbels (maxillary) reach to the pelvics, whereas in *P. murius* they are only as long as the head. Further differences are that in *P. garua* the adipose dorsal is absorbed in adults and the anal rays are less than 37, whereas, in *P. murius*, the adipose dorsal is always present and anal rays are more than 37. Length of head $5\frac{1}{2}$ -7. of caudal $5\frac{1}{4}$ -6, height of body $5\frac{1}{2}$ -6 in the total length.



TEXT-FIG. 86.—*Pseudeutropius murius* (Hamilton).

Colour : Silvery grey, darkest on the back.

Size : Our longest 11.8 inches. Day says 6 or 8 inches.

Habitat : Our only specimens have been taken in the Tista.¹ Day gives—'Rivers of Sind, Orissa, the Jumna and rivers of Bengal and Assam.'

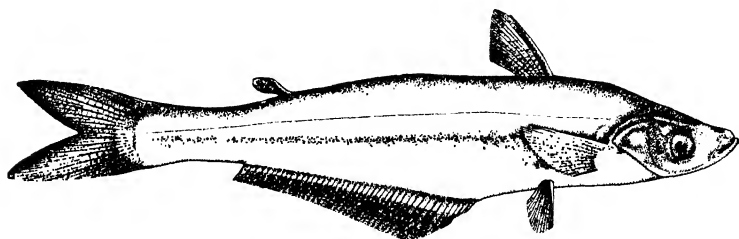
¹ A re-examination of the material showed that these specimens represented a new species of *Clupisoma*, which has been described as *C. montana* (*Journ. Bombay Nat. Hist.*, Vol. XXXIX, p. 673, 1937).—S. L. Hora.

[*Silonia silondia* (Ham.)], *F.B.I.*, No. 154 *Silundia gangetica*.

Bengali : *Shilong* শিলং.

D. 1/7 | 0. P. 1/11-13. V. 6. A. 4/36-44. C. 17.
Barbels 1 pair.

Very like *Eutropiichthys vacha* or *Pseudeutropius* spp. but having only one pair of minute (maxillary) barbels. Other distinguishing features are a longer snout, caniniform teeth and red lips in this species.



TEXT-FIG. 87.—*Silonia silondia* (Hamilton).

Colour : Silvery, darker on the back.

Size : Day says it attains 6 ft. or more. Our specimen was 9 inches long.

Habitat : Our only specimen was from Siliguri bazaar. Day gives—'Estuaries of India and Burma, ascending the larger rivers almost to their sources.'

KEY TO THE FAMILY BAGRIDÆ IN THIS LIST.

Dorsal spine weak *Olyra kempfi* (p. 94).

Dorsal spine strong :—

Dorsal and Pectoral spines not hollow :—

No shoulder-blotch :—

Longest barbels reach Pelvics :—

A black spot on hinder-edge of Adipose fin—

Mystus scenghala (p. 93)

Eight or 9 black spots along lateral-line *Mystus menoda* (p. 92)

Longest barbels reach Caudal; a black spot, or diffused darkening,
at the base of Dorsal spine . . *Mystus cavasius* (p. 91)

A darker band along lateral-line broadening into a shoulder-blotch :—

Barbels long :—

Longest barbels reach Pelvics, upper lobe of Caudal barely longer
than lower . . . *Mystus vittatus* (p. 93)

Longest barbels reach Anal; upper Caudal lobe longer—

Mystus bleekeri (p. 91)

Barbels short (longest much shorter than the head)—

Leiocassis rama (p. 90)

Dorsal and Pectoral spines stout, bony and hollow *Rita rita* (p. 95)

Leiocassis rama (Ham.), *F.B.I.*, No. 173.

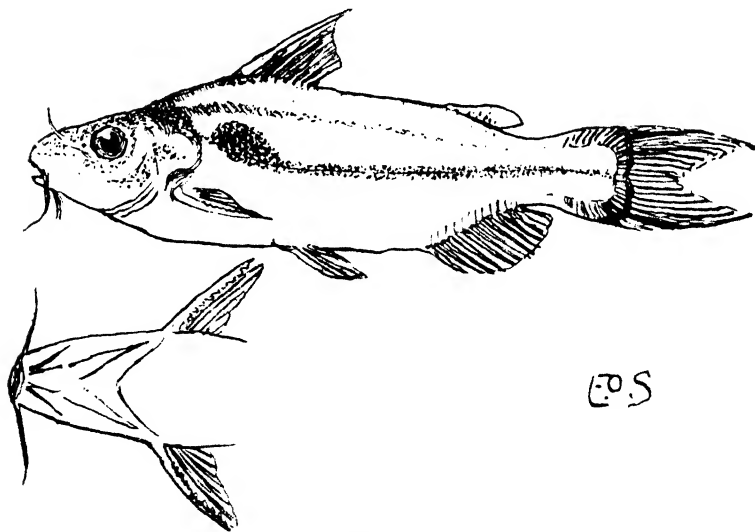
Plate 3, fig. 4.

D. $1\frac{1}{6}$ | 0. P. $1\frac{1}{5}$. V. 6. A. 13. C. 20(?). Barbels 4 pairs.

In general appearance resembles those species of *Mystus* which have a shoulder-blotch and longitudinal bands but has much shorter barbels. It therefore somewhat resembles *Batasio batasio* from which it is distinguished by having a shorter adipose fin and a longer anal.

Barbels: Nasal pair hardly reach the orbit; the longest pair (mandibular) reach the centre of the eye.

Fins: Base of the adipose fin shorter than that of the anal. Dorsal spine moderately stout, unserrated; pectoral spine stout with 10 recurved hooks on the inner side. Adipose fin shorter than the rayed dorsal.

TEXT-FIG. 88.—*Leiocassis rama* (Hamilton).

Colour: Leaden-grey above, whitish beneath. A well-marked but narrow dark band along the lateral line terminating in a shoulder-blotch. Another fainter band between the lateral line and the dorsal ridge extending from the opercle to the tail.

Size: Our longest specimen about 3 inches. Day says it does not exceed this size.

Habitat: All our specimens were from the Mahanadi near Siliguri. Day gives—'Eastern Bengal and Assam.'

Mystus bleekeri (Day), *F.B.I.*, No. 172 *Macrones bleekeri*.

Plate 3, fig. 6.

D. 1/7 | 0. P. 1/9-10. V. 6. A. 3/6-7. C. 17. Barbels 4 pairs.

General shape like others of the genus.

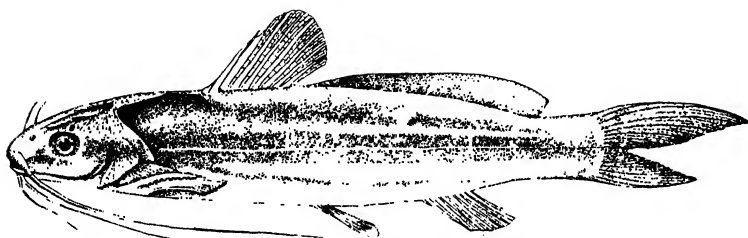
Barbels: The longest (maxillary) barbels reaching to the base of the anal fin.*Fins*: Adipose fin commencing just behind the rayed dorsal and three times as long. The rayed dorsal not as high as the depth of the body. The upper lobe of the caudal fin distinctly the longer.TEXT-FIG. 89.—*Mystus bleekeri* (Day).*Colour*: Leaden above, yellow beneath. A dark band along the lateral line ending in a dark shoulder spot in all our specimens but, according to Day, the latter may be absent. Above and below this band are lighter bands.*Size*: Our longest specimen $3\frac{1}{2}$ inches. Day says—'not attaining a large size'.*Habitat*: All streams in the Terai and Duars. Day gives—'Sind, Jumna, upper waters of the Ganges, and Burma.'**Mystus cavasius** (Ham.), *F.B.I.*, No. 163 *Macrones cavasius*.

Plate 3, fig. 3.

Bengali: *Tengra* টেঙ্গা.

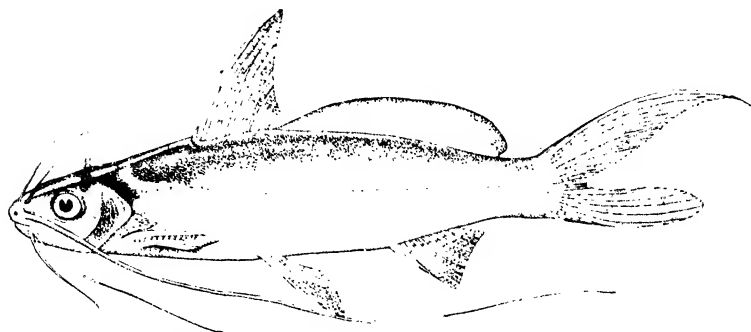
D. 1/7 | 0. P. 1/8. V. 6. A. 4/7-9. C. 16. Barbels 4 pairs.

General shape like others of the genus.

Barbels: The longest pair (maxillary) reach nearly to the base of the caudal fin.*Fins*: The rayed dorsal fin is rather higher than the depth of the body and pointed. The adipose fin commences just behind the rayed dorsal and is three times as long. The upper lobe of the caudal is the longer.*Colour*: Leaden above, yellowish beneath. There is usually a black spot covering the basal bone of the dorsal fin but in some of our specimens this amounts to no more than a darkening just in front of this fin. There may be a bluish band along the

lateral line but nothing that could be confused with the lateral stripes in *M. vittatus* and *M. bleekeri*.

Size: Our longest specimen was $6\frac{1}{2}$ inches. Day says it attains 18 inches.



TEXT-FIG. 90.—*Mystus cavasius* (Hamilton).

Habitat: Some of our specimens were from the Magurmari, a muddy stream in the Apalchand forest in the west of the Duars; others were from Siliguri bazaar. Day gives—'From Sind, throughout India, Assam and Burma.'

[*Mystus menoda* (Ham.)].

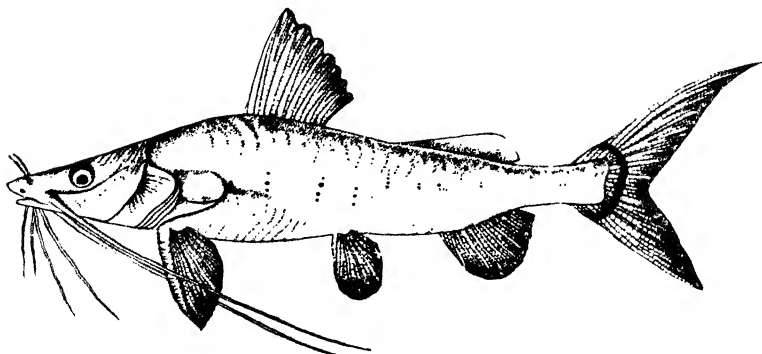
1822. *Pimelodus menoda*, Hamilton, *Fish. Ganges*, p. 203.

Plate 3, fig. 2.

See Chaudhuri's *Rec. Ind. Mus.*, VII, pp. 210–212 (1912).

Hindi (Bihar): *Belawna* बेलवना.

D. $1\frac{7}{7}$ | O. P. $1\frac{9}{9}$. V. 6. A. $3\text{--}5\frac{8}{8}$. C. 17. Barbels 4 pairs.



TEXT-FIG. 91.—*Mystus menoda* (Hamilton).

Very like *M. seenghala* except in colour. There is no spot on the adipose fin but a series of 8 or 9 small black spots along the lateral line.

Size : Our longest specimen was 9·8 inches.

Habitat : We have only seen them exposed for sale in Siliguri bazaar.

Mystus seenghala (Sykes), *F.B.I.*, No. 157 *Macrones seenghala*.

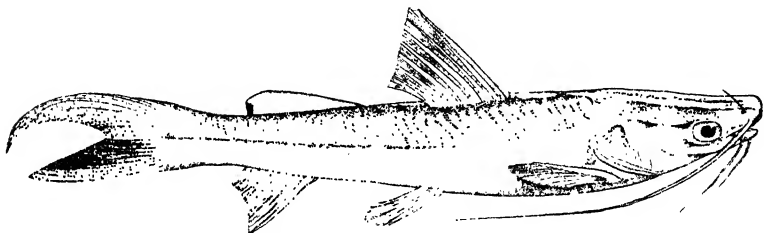
Plate 3, fig. 1.

Bengali : *Air* আইর ; Hindi : *Ari* अरौ or *Pogal* पोगल.

D. 1/7 | O. P. 1/9. V. 6. A. 3/8-9. C. 19-21. Barbels 4 pairs.

Snout chisel-shaped ; tail constricted behind the adipose fin but expanding again to the base of the caudal which is deeply cleft, the lobes pointed, the upper one being the longer. The adipose fin is about the same length as the rayed dorsal. The occipital process and a patch in front of the rayed dorsal bony and rough.

Barbels : The longest pair (maxillary) reach to the end of the pelvics.



TEXT-FIG. 92.—*Mystus seenghala* (Sykes).

Colour : Darker above and lighter beneath but without any longitudinal bands. A black spot about the size of the eye near the base of the adipose fin close to its posterior edge.

Size : Our longest specimen was 20 inches.

Habitat : We have caught them in the Bania River, Eastern Duars and also seen them very frequently exposed for sale in Siliguri bazaar. Day gives—'The Indus, salt-ranges of the Punjab, Jumna. and Ganges certainly as low as Delhi, also the Deccan, Kistna River to its termination, and Assam.'

Mystus vittatus (Bloch), *F.B.I.*, No. 166 *Macrones vittatus*.

Bengali : *Tengra* টেঙ্গা ; Mechi : *Na-tingna* ; Rabha : *Tengana*.

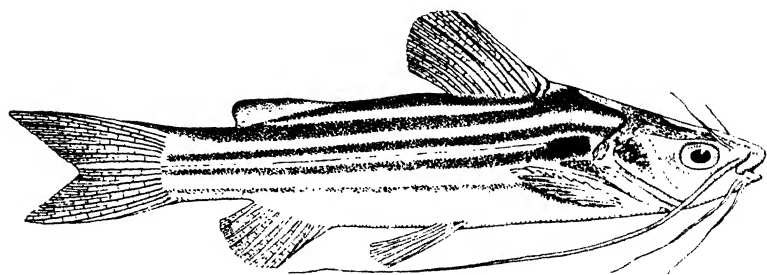
D. 1/7 | O. P. 1/9. V. 6. A. 2-3/7-9. C. 17. Barbels 4 pairs.

General shape like others of the genus.

Barbels : The longest pair of barbels (maxillary) reach to the base of the ventral fins.

Fins : The adipose fin is variable but always shorter than in *M. cavasius* being about the same length as the rayed

dorsal or a little longer. The upper lobe of the caudal fin is barely longer than the lower.



TEXT-FIG. 93.—*Mystus vittatus* (Bloch).

Colour: Leadен above, yellow beneath. A dark band along the lateral line ending in a very dark shoulder spot. Above and below this band are lighter bands.

Size: Our longest specimen 4 inches. Day says it attains 7 or 8 inches.

Habitat: Streams in the Terai and Duars. Day gives—‘Throughout Sind, the continent of India, Assam, Burma, Siam also Ceylon.’

*Olyra kemp*i Chaudhuri.

1912. *Olyra kemp*i, Chaudhuri, *Rec. Ind. Mus.*, VII, p. 443, fig. 4.

Plate 3, fig. 8.

Bengali: *Bot-singhi* বোট-শিংগি; Mechi: *Tara-ranji*; Rabha: *Na-hongsher*.

D. 7 | 0. P. 1/4. V. 5. A. 17-19. C. 12. Barbels 4 pairs.

Body slender, cylindrical in front, laterally compressed behind. The caudal is forked with an elongated upper lobe; the adipose fin is long and low. The distinction between this species and *O. longicaudata* (McClell.) from the descriptions at our disposal seems to lie in the number of rays in the anal fin (17-19 instead of 23).



TEXT-FIG. 94.—*Olyra kemp*i Chaudhuri. (Copied from *Rec. Ind. Mus.*)

Barbels: Maxillary pair the longest, reaching at least to base of the pectoral and sometimes beyond the end of it.

Colour: Dark brown above, grey beneath.

Size : Our longest 4·7 inches and said not to exceed this.

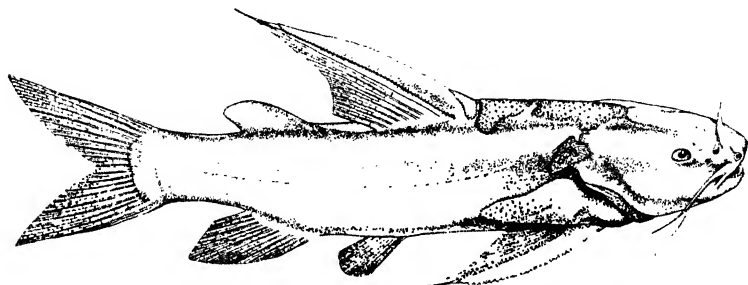
Habitat : Rivers of the Terai and Duars.

[*Rita rita* (Ham.)], *F.B.I.*, No. 175 *Rita buchanani*.

Bengali : *Rita* রিটা; Hindi (Bihar) : *Chona* चोना.

D. 1/6 | 0. P. 1/10. V. 8. A. 4/10(4-5/9. Day). C. 19. Barbels 3 pairs.

A stockily-built fish with very stout, hollow, bony spines to the dorsal and pectoral fins. That of the dorsal is very slightly serrate on the hinder edge, those of the pectorals strongly denticulate along both edges. The surface of the back between the head and the dorsal, as well as a shield above the pectoral, is bony and granulated.



TEXT-FIG. 95.--*Rita rita* (Hamilton).

Colour : Greenish-brown.

Size : We have seen specimens up to 18 inches long ; Day gives—'attaining at least 4 feet in length'.

Habitat : We have only seen them exposed for sale in Siliguri bazaar. Day gives—'Indus and affluent rivers, Jumna and Ganges, also the Irrawaddy.'

Habits : Day remarks that it is a very foul feeder.

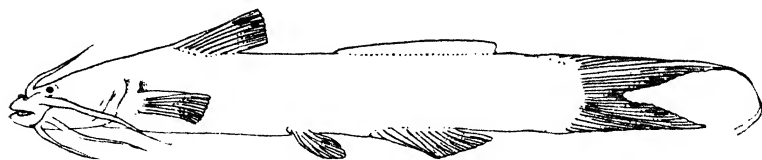
Amblyceps mangois (Ham.), *F.B.I.*, No. 131.

Hindi : *Billi* (Day) बिल्ली.

D. 1/6 | 0. P. 1/7. V. 6. A. 2-3/7-9. C. 19. Barbels 4 pairs.

Head flat and very wide with a large mouth and very small eyes. The body tapers uniformly from head to tail in the horizontal plane but is almost parallel-sided in the vertical plane. General appearance somewhat like that of *Olyra* but easily distinguished by the number of anal rays.

Fins: We have two forms one with the caudal fin deeply and the other with it slightly forked. The rays of the dorsal and anal fins partly enveloped in skin.



TEXT-FIG. 96.—*Amblyceps mangois* (Hamilton).

Sketch of a Siamese specimen. (Copied from *Rec. Ind. Mus.*)

Colour: Brownish-grey, lighter beneath.

Size: Our longest specimen 4 inches. Day gives up to 5 inches.

Habitat: Rivers of the Terai and Duars. Day gives—
‘The Himalayas; found in the Jumna for some considerable distance from the hills, also through Burma to Moulmein.’

Habits: Day notes that it bites viciously and lives for some time out of water.

KEY TO THE FAMILY SISORIDÆ IN THIS LIST.

Paired fins more or less horizontal and belly flattened, adapted for lying along the bottom :—

Dorsal spine not hard or bony :—

Upper margin of Caudal produced into a long filament :—

Sisor rhabdophorus (p. 107)

No Caudal filament :—

An adhesive apparatus under the thorax consisting of a dozen or more *transverse* parallel folds — *Pseudecheneis sulcatus* (p. 106)

No obvious adhesive apparatus .. *Euchiloglanis hodgarti*. (p. 100)

Dorsal spine hard and bony :—

An adhesive apparatus of *longitudinal* folds well developed : —

Longest barbels reach the gill-opening :—

No teeth on the palate *Glyptothorax telchitta* (p. 103)

Teeth on the palate *Glyptothorax lineatus* (p. 102)

Longest barbels reach Pectorals *Glyptothorax horai* (p. 101)

Adhesive apparatus absent or weak :—

Caudal and Pectorals produced into filaments —

Bagarius bagarius (p. 97)

No filaments from fins :—

Gill-openings narrow :—

Caudal very deeply forked *Erethistes elongatus* (p. 98)

Caudal shallowly forked .. *Erethistes hara* (p. 99)

Gill-opening wide :—

Origin of Pelvics nearer to base of Caudal than to tip of snout .. *Laguia shawi* (p. 104)

Origin of Pelvics equidistant between base of Caudal and tip of snout .. *Laguia ribeiroi* (p. 104)

Not specially adapted for lying along the bottom :—

- Gill-membranes attached to isthmus; 4 mandibular barbels in a transverse row on chin *Batasio batasio* (p. 97)
 Gill-membranes free from isthmus; 2 inner mandibular barbels in front of outer pair *Nangra punctata* (p. 106)

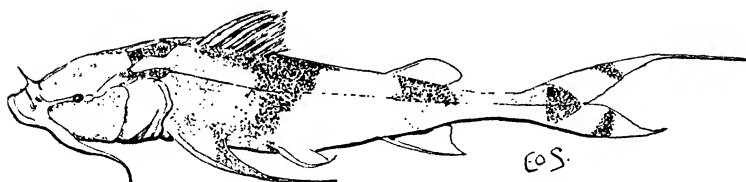
Bagarius bagarius (Ham.), *F.B.I.*, No. 207 *Bagarius yarrellii*.

The Goonch.

Bengali: *Bagha-ar* বাঘা-আড়; Hindi: *Gaunch* गौंच (Bihar): *Baghar* बाघार.

D. 1/6 | O. P. 1/12. V. 6. A. 3/10–12. C. 17. Barbels 4 pairs.

An ugly looking fish with a broad, flat head and a body tapering gradually towards the tail. Nasal barbels small and erect, maxillary pair large and fleshy, rather longer than the head. *Fins*—there are whip-like prolongations to the upper lobe of the caudal and pectorals. There is a bony and granular surface just in front of the dorsal fin.



TEXT-FIG. 97.—*Bagarius bagarius* (Hamilton).

Colour: Yellowish-brown with darker zones, one from the rayed dorsal to behind the pectorals and another from the adipose dorsal to the anal.

Size: We have seen one 7 ft. 1 in. long exposed for sale in Siliguri bazaar, also one weighing 45 lb. caught on rod and line in the Sankos River. Day says it attains 6 ft. or more and records one caught on rod and line measuring 5 ft. and weighing 136 lbs.

Habitat: Usually only in large rivers but we have had it from the Riyang. Day gives—'Large rivers of India and Java, descending to their estuaries.'

Habits: Thomas ('Rod in India') says this is probably the largest fish caught on rod and line in India. As it takes *Mahseer* bait and then lies up on the bottom without fighting it is not popular with anglers.

Batasio batasio (Ham.), *F.B.I.*, No. 224 *Gagata batasio*.

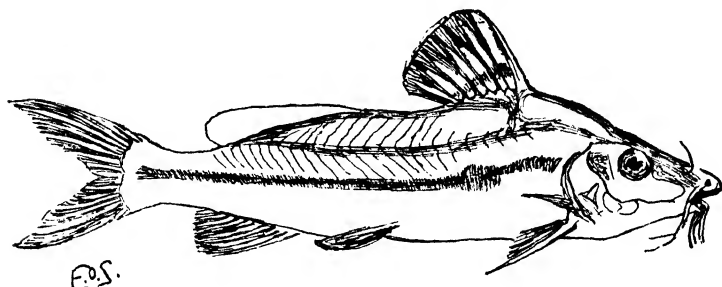
D. 1/7 | O. P. 1/9. V. 6. A. 2/7. C. 17. Barbels 4 pairs.

In general appearance resembles those species of *Mystus* which have a shoulder blotch and longitudinal bands, but has

shorter barbels. It therefore somewhat resembles *Leiocassis rama* from which it is distinguished by having a longer adipose fin and a shorter anal.

Barbels : The longest pair do not exceed the length of the head.

Fins : Base of the adipose fin longer than that of the anal.



TEXT-FIG. 98.—*Batasio batasio* (Hamilton).

Colour : Leaden above, yellow beneath. A dark longitudinal band along the lateral line expanding into a shoulder-blotch immediately below the dorsal fin. A second fainter and somewhat curved dark band midway between the lateral line and the dorsal ridge, commencing at the top of the opercle and ending about the middle of the adipose fin. It is connected with the dark colour of the dorsal ridge at the front part of the rayed dorsal.

Size : Our longest specimen about 4 inches. Day says—'attaining three inches'.

Habitat : Clear streams of the Terai and Duars. Day gives—'River Teesta.'

Erethistes elongatus Day, *F.B.I.*, No. 221.

Bengali : *Bot-tengra* বোট-টংগা ; Rabha : *Na-taram* ; Hindi (Bihar) : *Powan* पोवान.

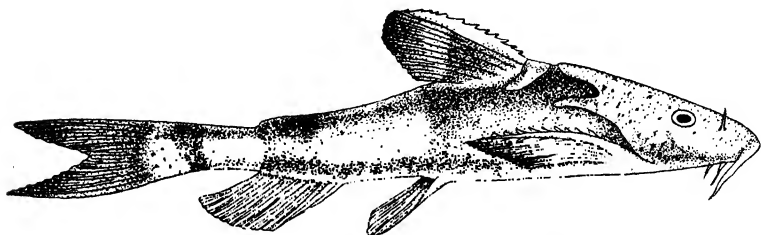
D. 1/6 | 0. P. 1/6. V. 6. A. 3/7-8. C. 17. Barbels 4 pairs.

A hard, bony little fish giving rather the impression of a miniature shark.

Fins : The dorsal spine is serrated on both edges ; the pectorals stand out stiffly in a horizontal plane. The caudal is deeply forked, the upper lobe being considerably longer than the lower (in a specimen 3·3 inches long the upper was an inch long and the lower half an inch. Day's figure, reproduced below, does not show this).

Colour : Day describes the body as being banded. Our specimens are almost black except for the fins. The dorsal is

margined with a lighter colour the spine with alternate dark and light bands. Both the inner and outer margins of both lobes of the caudal are similarly checkered with darker and lighter colour. The pectoral, pelvic and anal fins are banded darker and lighter across their whole width. The adipose dorsal is black.



TEXT-FIG. 99.—*Erethistes elongatus* Day.

Size : Our longest specimen was 3·3 inches.

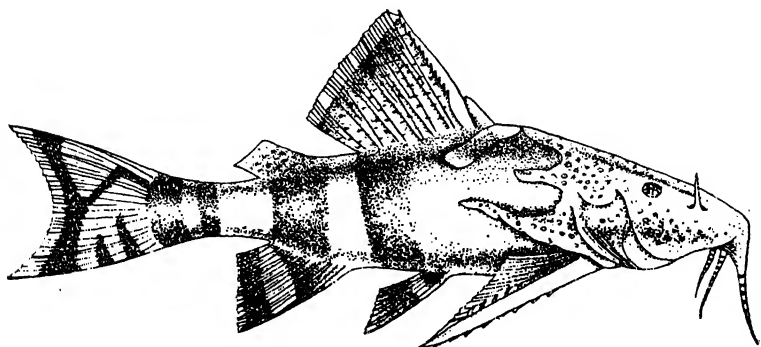
Habitat : Our specimens were from small streams near Siliguri and from the Phuljhora (in the Apalchand Forest, Western Duars). Day describes a single specimen from the Naga Hills.

Erethistes hara (Ham.), *F.B.I.*, No. 218.

Plate 3, fig. 13.

Bengali : *Kutakanti* কুটকান্তি or *Kurkati* কুৰ্কাতি ; Mechi : *Rakheb* ; Rabha : *Na-pallhong*.

D. 1/6 | 0. P. 1/6. V. 6. A. 3/7-8. C. 15. Barbels 4 pairs.

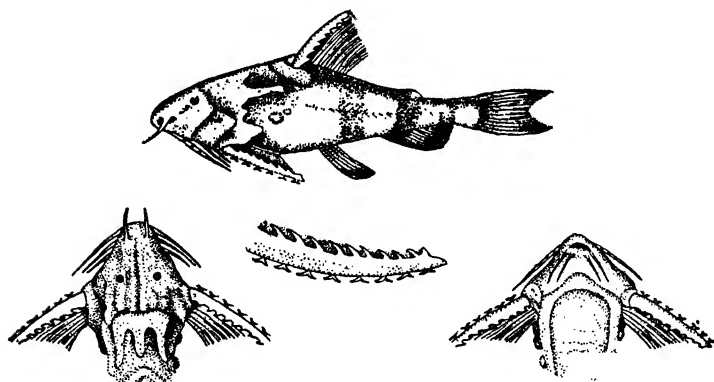


TEXT-FIG. 100.—*Erethistes hara* (Hamilton). An adult specimen.

Head flattened in the horizontal plane and body in the vertical plane. Viewed from above the horizontal pectorals give it an almost aeroplane-like appearance. The skin is very rough

with elevated spots or blunt bony spines. The caudal, though slightly forked, has not the elongated lobes of *E. elongatus*.

Colour : Olive brown with darker bands over the back opposite the pectoral, pelvic and anal fins, and another across the caudal. The pectoral spines are ringed with alternate darker and lighter bands, as are the larger barbels. Pectorals yellow with black dots.



TEXT-FIG. 101.—*Erethistes hara* (Hamilton). A young specimen.

Size : Our longest 6 inches. Day gives $5\frac{1}{2}$ inches.

Habitat : Small streams of the Terai and Duars. Day gives—'Rivers and contiguous pieces of water, from Orissa, through Bengal, Assam, and Burma.'

Euchiloglanis hodgarti (Hora).

1923. *Glyptosternum hodgarti*, Hora, *Rec. Ind. Mus.*, XXV, p. 38, pl. ii, figs. 1, 2, 3.

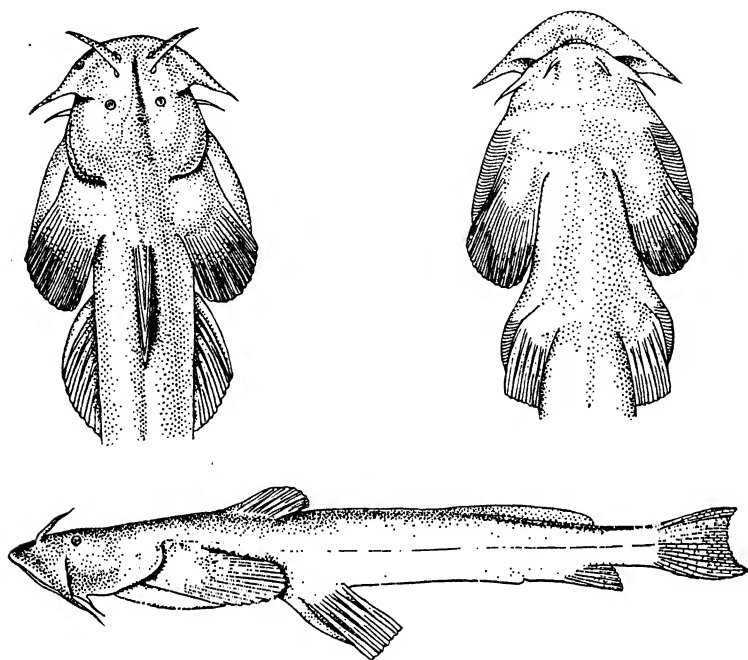
Nepalese : *Til-kabri* तिल-कबरी.

D. $1/6$ | 0. P. $1/17$. V. 6. A. $2/6$. C. 13. Barbels 4 pairs.

Body tapering from the wide, flat head towards the tail, the belly flattened between the horizontal pectoral fins and the partly horizontal ventrals. This part provides the fish with an adhesive apparatus which, however, is not so conspicuous as in *Pseudecheneis sulcatus* and the folds are only visible in fresh specimens. Day states that there is 'no thoracic adhesive apparatus' in this genus though he says that the chest 'appears to form a flat adhesive surface, bounded by the striated rays of the pectoral and pelvic fins'. Maxillary barbels wide and spreading, flattened at the base. Labial folds broadly interrupted, not reflected round the mouth.

Colour : Yellowish-brown.

Size : Our longest 3·4 inches.



TEXT-FIG. 102.—*Euchiloglanis hodgarti* (Hora). (Copied from *Rec. Ind. Mus.*)

Habitat : Riyang and Rangbi Rivers from 2,000 to 5,000 ft. elevation. (Rapid mountain streams with stony beds.)

***Glyptothorax horai* Shaw and Shebbeare.**

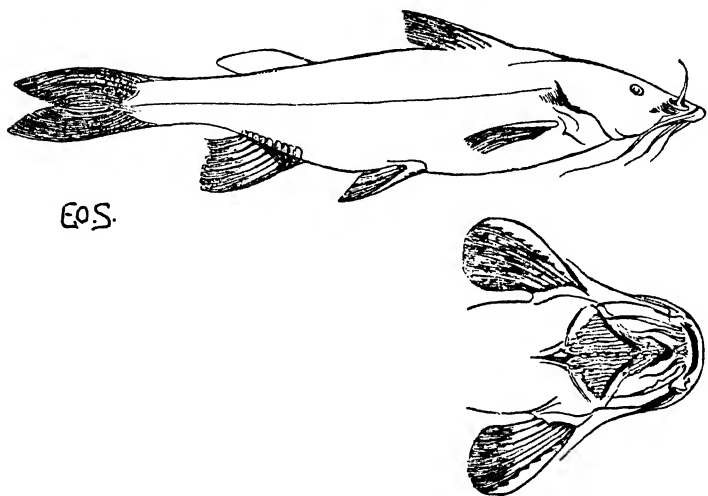
1937. *Glyptothorax horai*, Shaw and Shebbeare, *Jour. Bom. Nat. Hist. Soc.*, XXXIX, p. 188.

Nepalese : *Kala Kabri* काला-कबरी.

D. 1/6 | 0. P. 1/9. V. 6. A. 1/9. C. 19. Barbels 4 pairs.

Length of head $4\frac{1}{2}$, height of body $5\frac{1}{4}$ in total length. Width of head $\cdot 7$ of its length. Width of mouth $\frac{1}{2}$ that of head. Upper jaw the longer; a very slight fringe on upper lip. *Barbels* : the maxillary pair extend half way along the pectoral fin; the nasal pair reach the back of the orbit; the outer (longer) pair of mandibular barbels reach the base of the pectorals. Teeth on the jaw but not on the palate. *Fins* : dorsal $\frac{3}{4}$ height of body; spine moderately strong, smooth; adipose dorsal longer than rayed dorsal and $5/8$ th of interspace between them. Pectorals

reach to half way between base of pectorals and pelvics ; spine strong, flattened, with 8 or 9 strong curved teeth internally—not plaited. Pelvics with fine transverse marking. Caudal peduncle about half as high as long. Adhesive apparatus extends from lip to half way along base of pectoral. On the gill-covers it curves outwards but on lip and thorax it consists of longitudinal folds ; laterally it does not extend quite to the pectorals. In no other *Glyptothorax* that we know does the adhesive apparatus extend to the lip.



TEXT-FIG. 103.—*Glyptothorax horai* Shaw and Shebbeare.

Colour : Brownish yellow with a dark blotch on the shoulder. Anal and caudal fins darker at base and tip.

Size : Our longest specimen measured 4·4 inches.

Habitat : Streams of the Terai (Bengal).

The type specimen is in the Indian Museum, Calcutta.

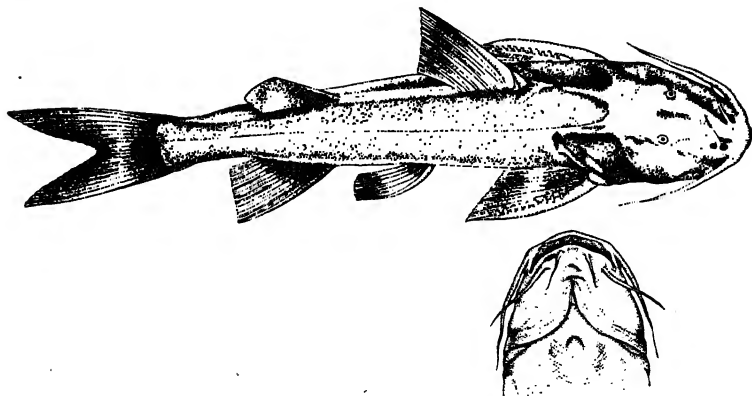
Glyptothorax lineatus (Day), *F.B.I.*, No. 217 *Euglyptosternum lineatum*.

D. 1/6 | O. P. 1/10. V. 6. A. 3/9-10. C. 17. Barbels 4 pairs.

The adhesive apparatus on the chest has a smooth space in the middle, though this may be narrow in small specimens.

Colour : Mottled dark brown. Day says there is a narrow light band along the side but in our specimens this is very indistinct. The fins are paler with darker bases and a darker band across each.

Size : Our largest $7\frac{1}{2}$ inches long. Day gives up to $12\frac{1}{2}$ inches.



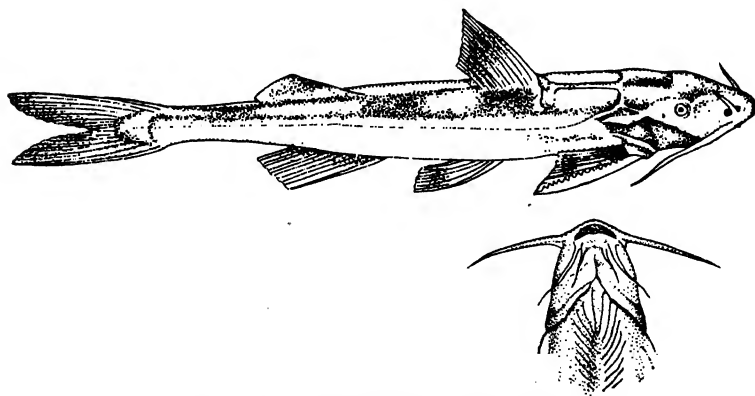
TEXT-FIG. 104.—*Glyptothorax lineatus* (Day).

Habitat : Small rivers of the Terai (Sivoke River) and Duars (Ghish and Chel Rivers).

Glyptothorax telchitta (Ham.), *F.B.I.*, No. 212 *Glyptosternum telchitta*.

D. $1\frac{1}{6}$ | 0. P. $1\frac{1}{8}$. V. 6. A. $2\frac{2}{9}$. C. 17. Barbels 4 pairs.

The skin is covered with small longitudinal elevations. The longest pair of barbels (outer mandibular) reach the gill-



TEXT-FIG. 105.—*Glyptothorax telchitta* (Hamilton).

opening. Day says the pupil of the eye is circular but we have found it slightly oval longitudinally. There is a pectoral adhesive apparatus.

Colour : Blackish brown, some yellow on the fins.

Size : Our longest 4 inches ; Day says 5 or 6 inches.

Habitat : We have caught them in the pools and runnels to which medium sized rivers of the Duars such as the Gish are reduced in the dry weather. Day gives—' Punjab, N.W. Provinces, Bengal, and Bihar.'

Laguvia ribeiroi Hora.

1921. *Laguvia ribeiroi*, Hora, *Rec. Ind. Mus.*, XXII, p. 741, pl. xxix, fig. 3.

D. 2/5-6 | 0. A. 1/8. Barbels 4 pairs.

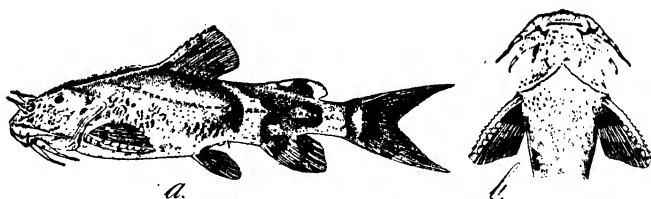
Hora differentiates this species from *L. shawi* on the following points :—

L. shawi.

1. The nostrils are equidistant from the tip of the snout and the anterior margin of the eye.
2. The origin of the ventral fin is distinctly nearer to the base of the caudal than to the tip of the snout.
3. The dorsal spine is almost smooth along both the borders.
4. The skin covering the belly is smooth.

L. ribeiroi.

- The nostrils are nearer to the tip of the snout than to the anterior margin of the eye.
- The origin of the ventral fin is almost equidistant from the tip of the snout and the base of the caudal fin.
- The dorsal spine is finely serrated along the whole of its anterior border and also along the upper third of the posterior border.
- The skin covering the belly is corrugated to form a kind of rudimentary adhesive apparatus.



TEXT-FIG. 106.—*Laguvia ribeiroi* Hora. (Copied from *Rec. Ind. Mus.*)

(a) Lateral view, $\times 2$; (b) Ventral surface of head and anterior part of body, $\times 2$.

We have not had an opportunity to examine this species.

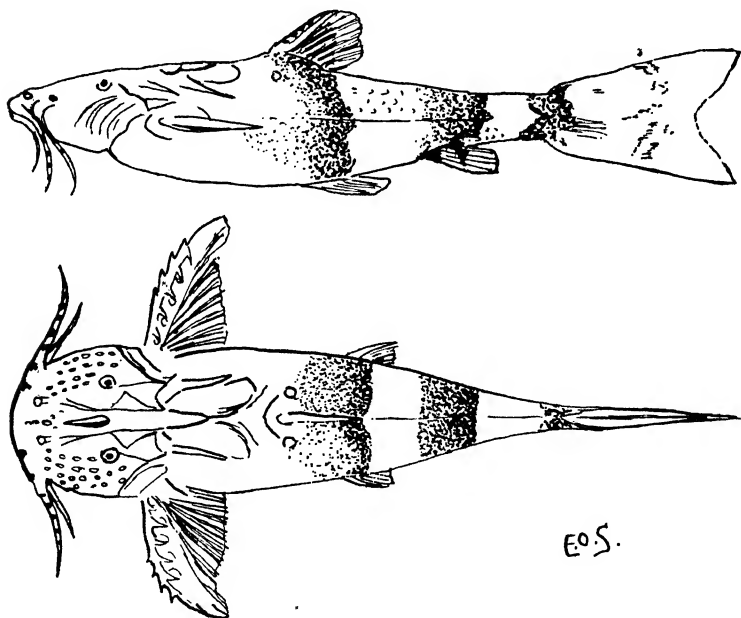
Habitat : The type specimen was found in the Khoila (Kharla ?) River, a tributary of the Tista at Jalpaiguri. It was $1\frac{1}{4}$ inches in length.

Laguvia shawi Hora.

1921. *Laguvia shawi*, Hora, *Rec. Ind. Mus.*, XXII, p. 740, pl. xxix, fig. 2.

D. 2/5-6 | 0. A. 1/8. Barbels 4 pairs.

Hora writes ‘* * * Closely resembles *Erethistes* from which it can be readily distinguished by the nature of its gill-openings which are very wide. From the Genus *Glypto-thorax* it differs in the possession of scapular processes, the presence of free bony tubercles on the sides of the body and in the absence of a well-marked adhesive apparatus on the ‘chest.’ (Note : We have found a rudimentary adhesive apparatus on the thorax in fresh specimens.)



TEXT-FIG. 107.—*Laguvia shawi* Hora.

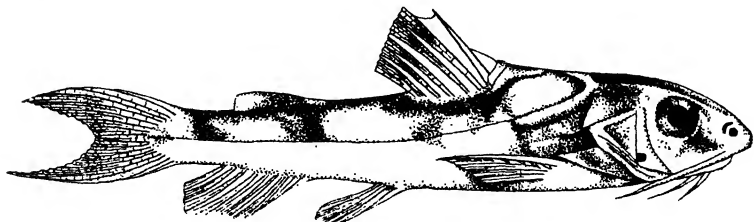
Hora describes this species as follows : ‘* * * Maxillary barbels broad at the base and reach the base of the pectoral fin. Dorsal spine strong, bony. Pectoral spine strong, almost as long as head, serrate externally, possesses about 7 hooked spines internally. Caudal fin has an almost semi-circular border with two sharp and pointed extremities. Two broad black bands on pale yellow body.’

Habitat : Sivoke River and various streams near Siliguri.

Nangra punctata Day, *F.B.I.*, No. 227.

D. 1/6 | 0. P. 1/8. V. 6. A. 3-4/8. C. 18. Barbels 3 or 4 pairs.

Day writes—'Very like the young of *Gagata cenia* but 'may be at once recognized by the position of the barbels and 'the broader head.' In *Gagata*, also, the gill-covers are confluent with the skin of the isthmus. According to Day's figures of the two species there is considerable difference in the form of the adipose fin.



TEXT-FIG. 108.—*Nangra punctata* Day.

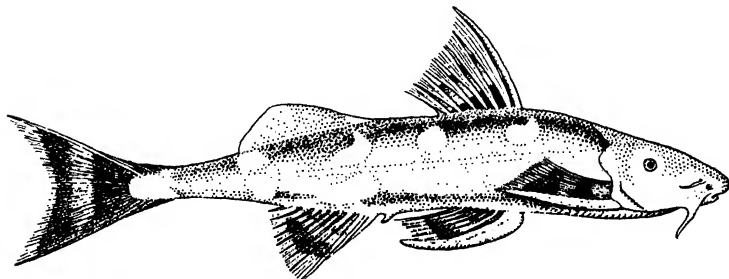
Colour: Day gives—'Coppery glossed with gold on the sides.' Our specimens have six transverse dark bands across the back reaching to just below the lateral line. The first of these is on the head, the second between the head and the pectoral, the third at the pectoral, the fourth at the anterior and the fifth at the posterior end of the adipose fin and the sixth across the tail.

Pseudecheneis sulcatus (McClell.), *F.B.I.*, No. 113.

Plate 3, fig. 12.

Nepalese: *Kabri* कबरी.

D. 1/6 | 0. P. 1/13. V. 6. A. 2-4/7-9. C. 17. Barbels 4 pairs.

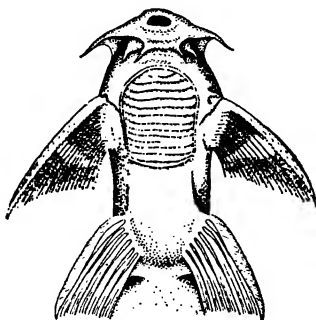


TEXT-FIG. 109.—*Pseudecheneis sulcatus* (McClelland.).

From the front of the dorsal fin the body tapers conically to the tail and forwards to the somewhat flattened head. The

under side of the thorax is flattened into an adhesive apparatus consisting of 14 transverse folds of skin between the pectoral fins, which are horizontal.

Colour : Greyish-brown with yellow blotches ; fins red to yellow with black bands.



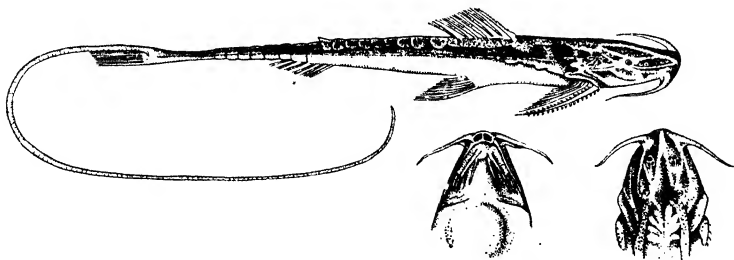
TEXT-FIG. 110.—Ventral surface of head and anterior part of body of *Pseudecheneis sulcatus* (McClelland).

Size : Our largest 5·8 inches. Day says they attain 7·8 inches.

Habitat : The Riyang River from 800 to 1,600 feet elevation ; at this part it is a swift mountain stream with a stony bed. Day gives—' Darjeeling and Khasi Hills.'

Sisor rhabdophorus Ham., *F.B.I.*, No. 112.

D. 1/6. P. 1/8. V. 7. A. 6(2/4). C. 11. Barbels 3 pairs and several shorter ones.



TEXT-FIG. 111.—*Sisor rhabdophorus* Hamilton.

Elongated and tapering away from a flat head, the most striking feature being a filament from the upper edge of the caudal fin which may equal in length the rest of the fish. It

is protected by bony plates, those on the hinder half of the body being in the form of twelve osseous rings like those of a pipe-fish.

Colour: Blackish above, lighter below.

Size: Day says that the largest he had seen was 8 inches excluding the caudal filament.

Habitat: A single specimen was found by Dr. Hora among our fishes though we had not noticed it ourselves. Later Mukerji obtained a specimen from near Siliguri and, we think, he has since had more specimens from the Tista. Day gives—'Indus, Sind, Ganges, and Jumna rivers in Northern India, Bengal, and Bihar.'

Group VIII.—THE GAR-FISH.

Xenentodon cancila (Ham.), *F.B.I.*, No. 536 *Belone cancila*.

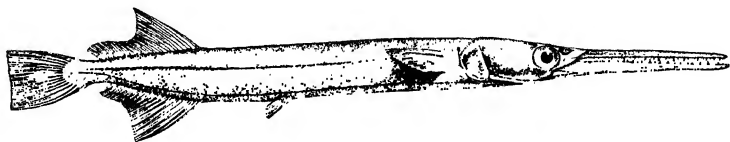
The Gar-fish.

Plate 4, fig. 15.

Bengali: *Kankle* কাকলে or *Kakhya* কাখা (in the Terai): *Thona* থোনা; Hindi: *Kawa* कावा; Mechi: *Kankila*; Rabha: *Nakunta*.

D. 15-18. P. 11. V. 6. A. 16-18. C. 15.

Body elongate, both jaws lengthened into a long beak. The dorsal and anal fins similar and, being arranged symmetrically close to the tail, give the fish a torpedo-like appearance.



TEXT-FIG. 112—*Xenentodon cancila* (Hamilton).

Colour: Day gives—'Greenish-grey above, becoming whitish along the abdomen; a silvery streak having a dark margin extends along the body from opposite the orbit to the centre of base of caudal fin. The whole upper two-thirds of the body closely marked with fine black spots; along the side, between the pectoral and anal fins, there are 4 or 5 larger blotches, these are absent in the young. Eyes golden.'

Size: Day says it attains at least 12 inches in length and we have seen them up to this size.

Habitat: Streams of the Terai and Duars especially in pools in clear, gravelly perennial streams. Day gives—'Fresh waters of Sind, India, and Ceylon, also throughout Burma.'

Group IX.—THE PIPE-FISH.

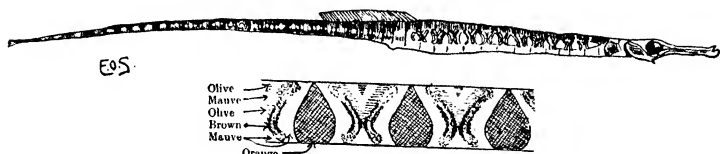
Doryichthys deocata (Ham.), *F.B.I.*, No. 1363.

Pipe-fish.

Plate 4, figs. 10 and 11.

D. 30. P. 15.

Body long, slender and sub-cylindrical covered with ridged bony rings, 16 on the body and 31 on the tail. Snout produced with small, terminal mouth. Dorsal fin opposite the vent covering 8 rings, 2 before and 6 after the vent. Pectoral, anal and caudal fins present but no pelvics. The caudal is very short. The male is smaller than the female and has a long groove on the abdomen in which he carries the eggs until they are hatched.

TEXT-FIG. 113.—*Doryichthys deocata* (Hamilton).

The lower figure represents the colour pattern of the fish.

Colour : The male is brown and inconspicuous. The female is orange in ground-colour, each segment ornamented with a fleur-de-lis-like pattern in brown and olive outlined in mauve.

Size : The male attains about $4\frac{1}{2}$ and the female $5\frac{1}{2}$ inches.

Habitat : The Panchenai River in the Terai and small rivers in Borojhar Forest (Central Duars). Day gives—'Rivers of Bengal and Bihar.'

Habits : They swim in an upright position. As noted above the male carries the eggs.

Group X.—THE FISH WITH PERCH-LIKE DORSALS.

KEY TO FISHES WITH PERCH-LIKE DORSALS IN THIS LIST.

Lateral line, if present, continuous ; soft Dorsal the longer :—

A gap between spiny and soft Dorsals ; eyes on the top of the head *Glossogobius giuris* (p. 114)

Spiny and soft Dorsals touching :—

Body laterally compressed, more or less translucent, scales deciduous and uncountable *Ambassis* (p. 110)

Lateral line 50 or more :—

Caudal rounded ; l.l. 50–55

Sciæna coitor (p. 115)

Caudal tapering to a point ; l.l. 50

Sciænoides pama (p. 116)

Lateral line 28–31 ; snout pointed

Ctenops nobilis (p. 113)

Lateral line present and interrupted; spiny Dorsal the longer :—

Pelvics each a single filiform ray .. *Trichogaster* (p. 117)

Pelvics normal :—

Lateral lines 46–57 *Nandus nandus* (p. 115)

Lateral line 32 or less :—

3 anal spines; l. l. 26–33 *Badis badis* (p. 112)

9–10 anal spines; l. l. 28–31 *Anabas testudineus* (p. 112)

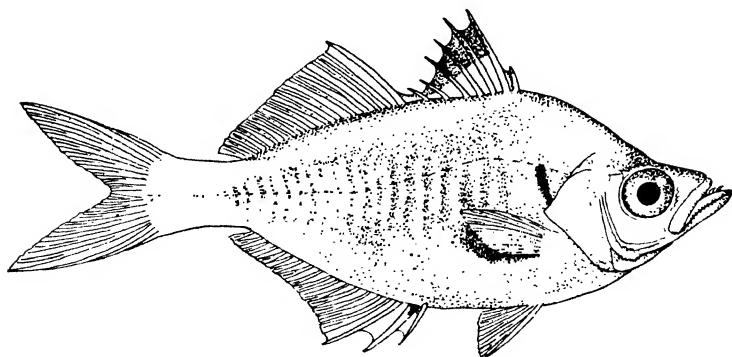
This group, as already pointed out, is a very wide and a somewhat loosely-connected one containing, as it does, our few local representatives of the whole order *Percomorphi* except the single genus *Ophicephalus* which we have made into another group—the Murrels. The fact that, of all Indian species in Day's Fishes (Fauna of British India Series) more than half (750 out of 1418) belong to this order, shows its importance in India as a whole. We have listed only 17, namely the 11 'Fishes with Perch-like Dorsals' given above and 6 'Murrels' (out of a total of 9 in Day).

The key above is an entirely artificial one and does not bring the species into their correct sequence (which is the one followed in our list on pages 4–8). Thus *Badis badis* and *Anabas testudineus*, which happen to come together in the key, are not close relations, in spite of their similarity in shape.

Ambassis nama (Ham.), *F.B.I.*, No. 628.

Bengali (local) : *Chanda* চান্দা, (Lower Bengal) : *Nama chānda*
নামা চান্দা; Hindi (Bihar) : *Channa* चान्ना.

D. 7 | 1/13–17. P. 13. A. 3/14–17. C. 17.



TEXT-FIG. 114.—*Ambassis nama* (Hamilton).

Deep and strongly compressed laterally, almost flat. Dorsal and ventral profiles about equally convex. We confused this fish with *A. ranga* until Dr. Hora pointed out that both species occurred among our specimens. The chief difference is that

A. nama has 2 or 3 large crooked canine teeth on either side of the lower jaw whereas in *A. ranga* all the teeth are small. The former is usually not quite so deep in the body as the latter, the height of the body in the total length being $2\frac{3}{4}$ -3 in *A. nama* against $2\frac{1}{3}$ - $2\frac{1}{2}$ in *A. ranga*.

Colour : Translucent yellowish with a silvery wash on the sides, covered all over with minute black dots which coalesce to form a shoulder spot just behind the gill-opening.

Size : Day says it attains 3 or 4 inches ; our largest was $2\frac{1}{2}$ inches long.

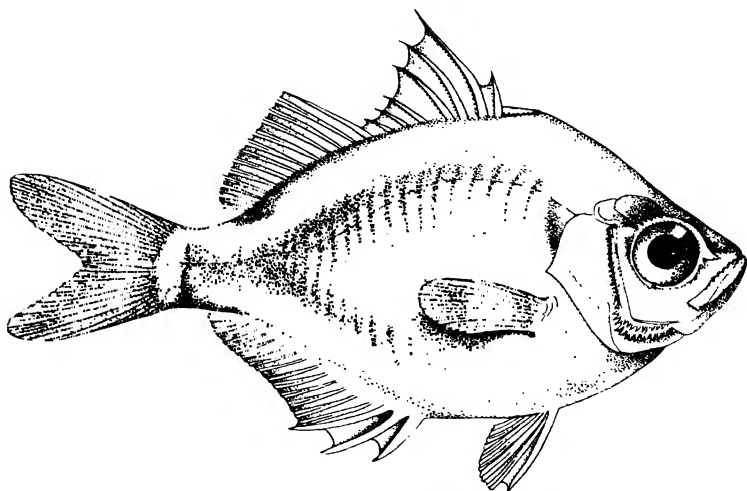
Habitat : Our specimens of this species were from the Indong Jhora (Central Duars) and from streams about Siliguri. It is probably common throughout the Terai and Duars. Day gives—'Throughout the fresh waters of India, Assam, and Burma.'

Ambassis ranga (Ham.), *F.B.I.*, No. 629.

Bengali (local) : *Chanda* চান্দা (Lower Bengal) : *Ranga chānda* রান্গা চান্দা ; Hindi (Bihar) : *Channa* चान्ना.

D. 7 | 1/13-15. P. 11. A. 3/14-16. C. 17. L. r. 60-70.

In shape and colour this fish resembles *A. nama* but is rather deeper in the body. The chief distinction is in the teeth which are all small in *A. ranga*.



TEXT-FIG. 115.—*Ambassis ranga* (Hamilton).

Size : We have had them up to about $2\frac{1}{2}$ inches long ; Day says—'a few inches in length'.

Habitat : Clear streams and rivers of the Terai and Duars. Day gives—'Throughout India and Burma.'

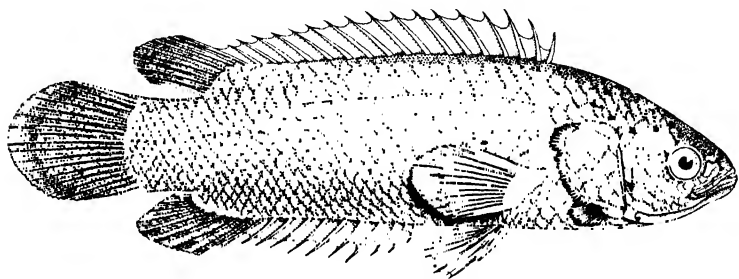
Anabas testudineus (Bloch), *F.B.I.*, No. 1208 *Anabas scandens*.

The Climbing Perch.

Bengali : *Koi* কই; Rabha : *Na-kowi* ; Hindi (Bihar) : *Kobhai* कोभाई.

D. 17-18/8-10. A. 9-10/9-11. L. 1. 28-32.

Body oblong, laterally compressed, head wide. A cavity above the gills contains an elaborate respiratory apparatus so that this fish can live for a long time out of water. The lateral line is interrupted at about the 17th scale.



TEXT-FIG. 116.—*Anabas testudineus* (Bloch).

Colour : Greenish-brown, lighter beneath. Traces of four wide vertical bands but not so marked as in *Badis badis* which is rather like this species. Day says the young have a black blotch on side of base of tail, surrounded by a light, sometimes yellow, ring ; usually they have a black spot at the end of the opercle.

Size : Day gives—‘Attaining at least 8½ inches’. Our specimens have mostly been small.

Habitat : Streams of the Terai and Duars ; not very common. Day gives—‘Estuaries and fresh waters of India, Ceylon, and Burma, the Malay Archipelago and Philippines.’

Habits : This fish is said to travel for some distance on land, and even climb trees. We have not observed this.

Badis badis (Ham.), *F.B.I.*, No. 825 *Badis buchanani*.

Plate 4, fig. 9.

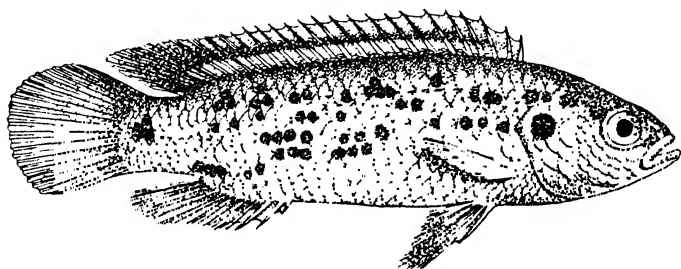
Bengali (local) : *Bot-koi* বট-কই, (Lower Bengal) *Bhedo* ভেদো or *Bheda* ভেদা ; Mechi : *Na-dego* ; Rabha : *Mojipra*(p).

D. 16-17/7-10. P. 12. A. 3/6-8. C. 16. L. 1. 26-33.

The body is an elongated oval, laterally compressed, the head is scaled. The lateral line is placed high on the body but

is interrupted about 8 or 9 scales from the caudal and continues in the usual position on the tail.

Colour : Variable ; there are usually a series of darker transverse bands on a ground-colour of dirty red, dark brown or dark green but, in larger fishes especially, the ground-colour is too dark for any bands to be visible. Day mentions bluish-black spots, one on the shoulder, another on the opercle and a third near the base of the caudal, as sometimes occurring. We do not appear to have noticed these. One smallish specimen, from the Apalchand River in the west of the Duars, was very beautifully barred with scarlet and rose pink.



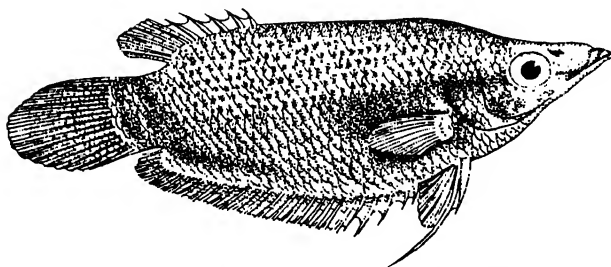
TEXT-FIG. 117.—*Badis badis* (Hamilton).

Size : Day gives—' At least $3\frac{1}{2}$ inches in length ' and our largest specimen must have been about this size.

Habitat : Clear streams in the Duars and Terai, e.g. the Apalchand River and the Panchenai near the foot of the hills.

Ctenops nobilis McClell., *F.B.I.*, No. 1211 *Osphronemus nobilis*.

D. 5-6/7-8 P. 12. A. 5/23-25. C. 16. L. 1. 28-31.



TEXT-FIG. 118.—*Ctenops nobilis* McClelland.

Body deep, laterally compressed, the ventral outline more curved than the dorsal. Snout long and pointed. Mouth small,

oblique, protractile. Dorsal situated in the last third of the body. Outer pelvic ray prolonged into a filament.

Colour : Brown ; a silvery white band, usually interrupted, passes from the eye to the middle of the tail. A second, still more interrupted, band from the pectoral along the side and a third along the base of anal. There is sometimes a diffuse black, lighter-edged ocellus at the upper part of the base of caudal.

Size : Day gives—‘at least four inches’. We have had them up to 3 inches.

Habitat : Streams of the Duars, not common. We have also seen them for sale in Siliguri bazaar. Day gives—‘Rivers of N.E. Bengal and Assam, extending into those of the hills’.

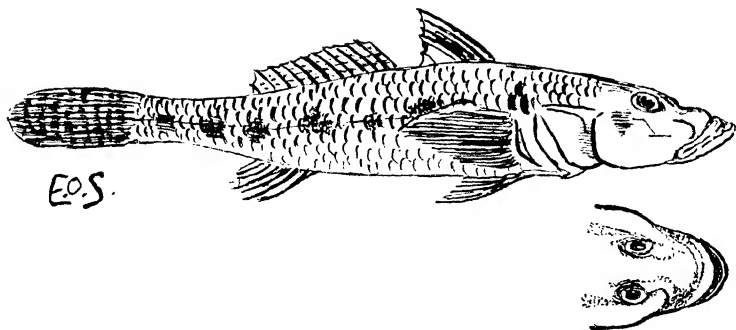
Glossogobius giuris (Ham.), *F.B.I.*, No. 1051 *Gobius giuris*.

Plate 4, fig. 16.

Bengali (local) : *Bhalia* ভালা, (Southern Bengal) *Beley* বেলে ; Rabha : *Bhal-chata* ; Hindi (Bihar) : *Bhula* भूला.

D. 6/1/8-9. P. 20. A. 1/8-9. C. 17. L. 1. 30-34.

A long, tapering fish, head somewhat compressed vertically. Eyes placed on the top of the head and only $\frac{1}{3}$ rd to $\frac{1}{4}$ th their diameter apart. Lower jaw the longer. Pelvic fins united forming a disc which is only attached by the base.



TEXT-FIG. 119.—*Glossogobius giuris* (Hamilton).

Colour : Transparent yellowish-grey with vague blotches of sepia along the lateral line. Pelvic fins spotted.

Size : Day says it attains $1\frac{1}{2}$ feet. Our largest was only a few inches long.

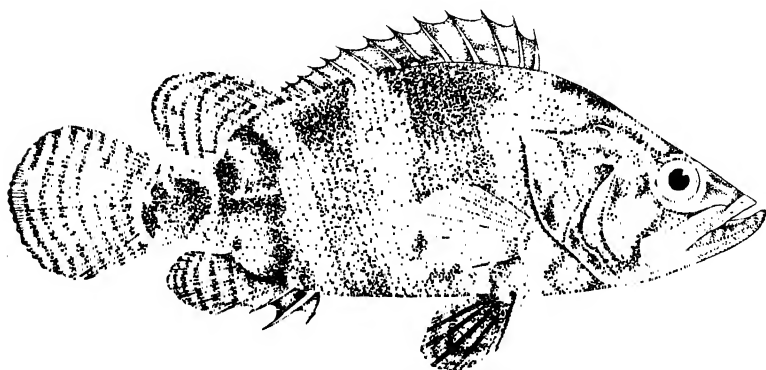
Habitat : Streams of the Terai and Duars, not common.

Nandus nandus (Ham.), *F.B.I.*, No. 827 *Nandus marmoratus*.

Bengali (local): *Dudhukhal* দুধুখাল, (Lower Bengal): *Nandus* নান্দুস; Meehi: *Thota* or *Na-tika*; Rabha: *Bhaja-budi*.

D. 12-14/11-13. V. 1/5. A. 3/7-9. L. l. 46-57.

A deep, laterally compressed fish with a nearly straight belly and arched back. The snout is pointed and the mouth deep-cleft and very protractile. The lateral line is interrupted at about the 36th scale. Length of head 3, of caudal $5\frac{1}{2}$ and height of body $3-3\frac{1}{2}$ in total length.



TEXT-FIG. 120.—*Nandus nandus* (Hamilton).

Colour: Greenish-brown with brassy reflections, vertically marbled with three broad patchy bands; also a dark blotch on free portion of tail. Narrow bands of spots across fins.

Size: Day gives—'Attains at least 7 inches' and our largest was about this length.

Habitat: Muddy streams and ponds of the Terai and Duars. Day says—'It is common in ditches and inundated fields where it preys on small Cyprinidæ.'

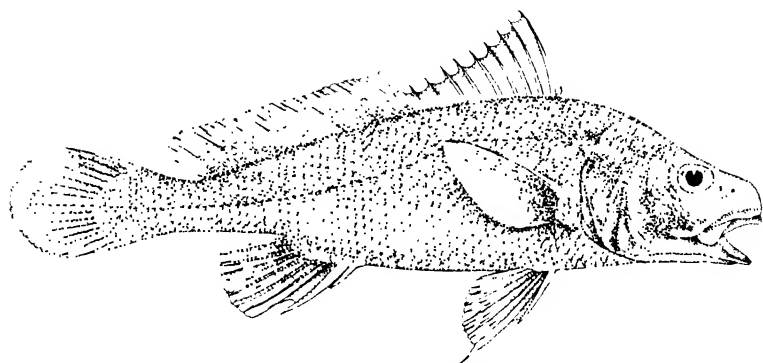
[*Sciæna coitor* (Ham.)], *F.B.I.*, No. 868.

D. 10 | 1-2/26-29. A. 2/7. L. l. 50-55. No barbels.

Body rather elongate, transversely compressed. There are pores round the mouth. No large canine teeth in front of the jaws but an inner row of enlarged teeth in the lower jaw. Caudal wedge-shaped.

Colour: Silvery, anterior part of first dorsal blackish.

Size : Day gives—'Attains a foot in length.' Our only specimen, from Siliguri bazaar, was 7·3 inches.



TEXT-FIG. 121.—*Sciæna coitor* (Hamilton).

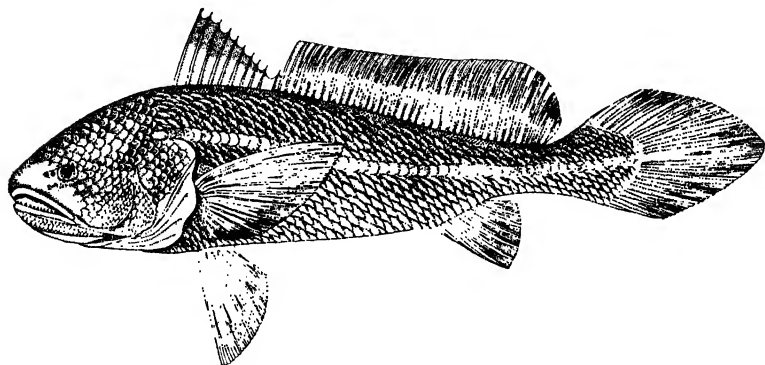
Habitat : Day gives 'throughout the larger rivers of India'. Our specimen was said to have come from Bihar but may have come from the Ganges.

[*Sciænoides pama* (Ham.)], *F.B.I.*, No. 879.

Plate 4, fig. 14.

D. 10 | 1/40–43. A. 2/7. L. 1. 55. No barbels.

Body rather elongate, transversely compressed. Upper jaw with an outer row of curved and conical teeth, canine-like anteriorly, not large. Caudal fin tapering to a point.



TEXT-FIG. 122.—*Sciænoides pama* (Hamilton).

Colour : Light brownish along the back becoming white beneath.

Size : Day gives—' At least 5 feet '. Our solitary specimen, from Siliguri bazaar, was $7\frac{1}{2}$ inches long.

Habitat : Day gives—' Bay of Bengal entering estuaries and rivers as far as the tide extends.' It would be interesting to know where our specimen was caught, as fish are not usually imported from farther afield than the Ganges crossing.

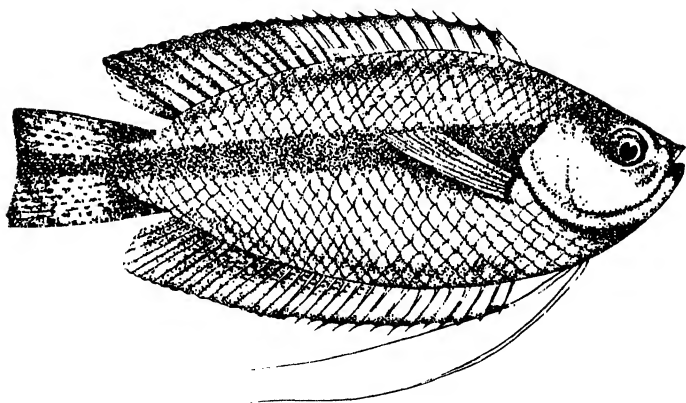
***Trichogaster chuna* (Ham.). *F.B.I.*, No. 1212.**

Bengali : *Chuna khalisha* চুনা খলিশা.

D. 17-18/7-8. P. 9. V. 1. A. 17-20/11-15. L. 1. 27-29.

Body deep, compressed ; cleft of mouth small. Each pelvic fin consists of a single, filiform ray. Lateral line interrupted.

Colour : Dull greenish or brownish, lighter along abdomen. A dark band along the side to the lower half of the tail.



TEXT-FIG. 123.—*Trichogaster chuna* (Hamilton).

Size : Day gives—' The largest out of 20 specimens was 1·8 inches long '. Our only specimen was 1·6 inches.

Habitat : The Terai, where we found our only specimen. Day gives—' From the Brahmaputra at Dibrugarh, Upper Assam, to the Hooghli at Calcutta.'

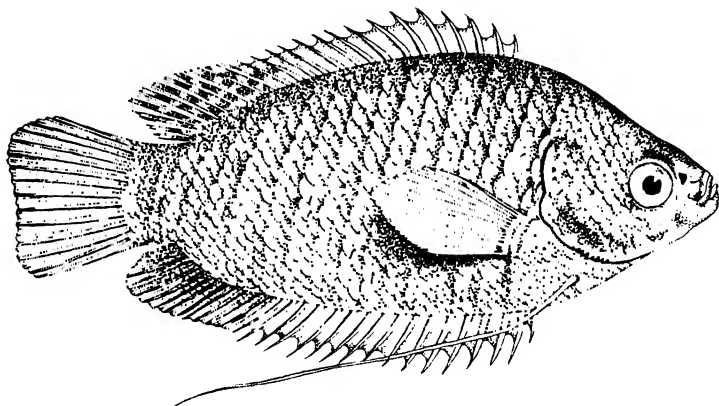
***Trichogaster fasciatus* Bl. & Schn., *F.B.I.*, No. 1214.**

Plate 4, fig. 7.

Bengali : (coloured bands inconspicuous) *Chopra* চোপরা
(coloured bands well-marked) *Khalisha* খলিশা, *Cheli* চেলী ;
Rabha : *Na-prap*.

D. 15-17/9-13. A. 15-18/14-19. L. 1. 29-31.

Body deep, compressed laterally. Cleft of mouth small. Each pelvic fin consists of a single, filiform ray reaching at least to the base of the caudal. Lateral line interrupted.



TEXT-FIG. 124.—*Trichogaster fasciatus* Bloch & Schneider.

Colour : Greenish or bluish above, dirty white below. Fourteen or more orange bands descend obliquely downwards and backwards from the back to the belly with intermediate blue bands which are often more conspicuous. Individual specimens vary from gaily-coloured fish to those in which the bands are hardly noticeable. Day notes a green spot on the gill-cover, pelvic fins edged with red and variegated with black, green, and white, dorsal and caudal spotted with orange and eyes red. He also notes that immature specimens have a black spot at the root of the caudal.

Size : Day gives—'attains 5 inches'. Our largest was about 3 inches long.

Habitat : Clear streams in the Terai and Duars. Day gives—'The Coromandel Coast as far as the river Kistna, the estuaries of the Ganges ; Cachar, Assam, Punjab, North-West Provinces, Sind, and Burma.'

Group XI.—THE MURRELS.

This group contains only one Genus in our area—*Ophicephalus*—the snake-headed fishes, best known to anglers by their one sporting member—the *Murrel* (*O. marulius*). All species in this genus have cavities in the head which act as a primitive lung and this enables them to live for a long while out of water.

All the six species in our area are very much alike in shape though differing greatly in colour. For this reason any key to the genus based mainly on shape is less likely to be satisfactory than one based mainly on colour. As, however, it may be necessary to identify a specimen preserved in spirit which will have lost most of its colour, we have given a key of each kind.

KEY BASED MAINLY ON SHAPE.

	<i>O. marulius.</i>	<i>O. amphibius.</i>	<i>O. striatus.</i>	<i>O. stewartii.</i>	<i>O. gachua.</i>	<i>O. punctatus.</i>
Dorsal rays ..	45-55	51	37-45	39-40	32-37	29-32
Anal rays ..	28-36	34	23-26	26	21-23	21-23
Scales from preopercle to orbit ..	9-10	10	9	5	4-5	5
Scales from snout to dorsal fin ..	15-16	16	18-20	13	12	12
Ratio length of pelvics to pectorals ..	over $\frac{1}{2}$	$\frac{2}{3}$	$\frac{2}{3}$	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{3}{4}$

KEY BASED MAINLY ON COLOUR.

A. Pectorals plain :

- (a) Ocelli with centre darker and margin lighter than ground colour on lateral line or base of caudal or both—*O. marulius* (p. 122)
- (b) Belly blue or green, orange bars on flanks *O. amphibius* (p. 119)
- (c) Blackish above, yellow below, lateral line with peninsulas of the darker colour extending into the yellow *O. striatus* (p. 124)
- (d) Darker and lighter patches alternating above and below the lateral line, Chin not marbled .. *O. punctatus* (p. 123)

B. Pectorals spotted in zones, darker and lighter patches continuous above and below the lateral line, Chin marbled :—

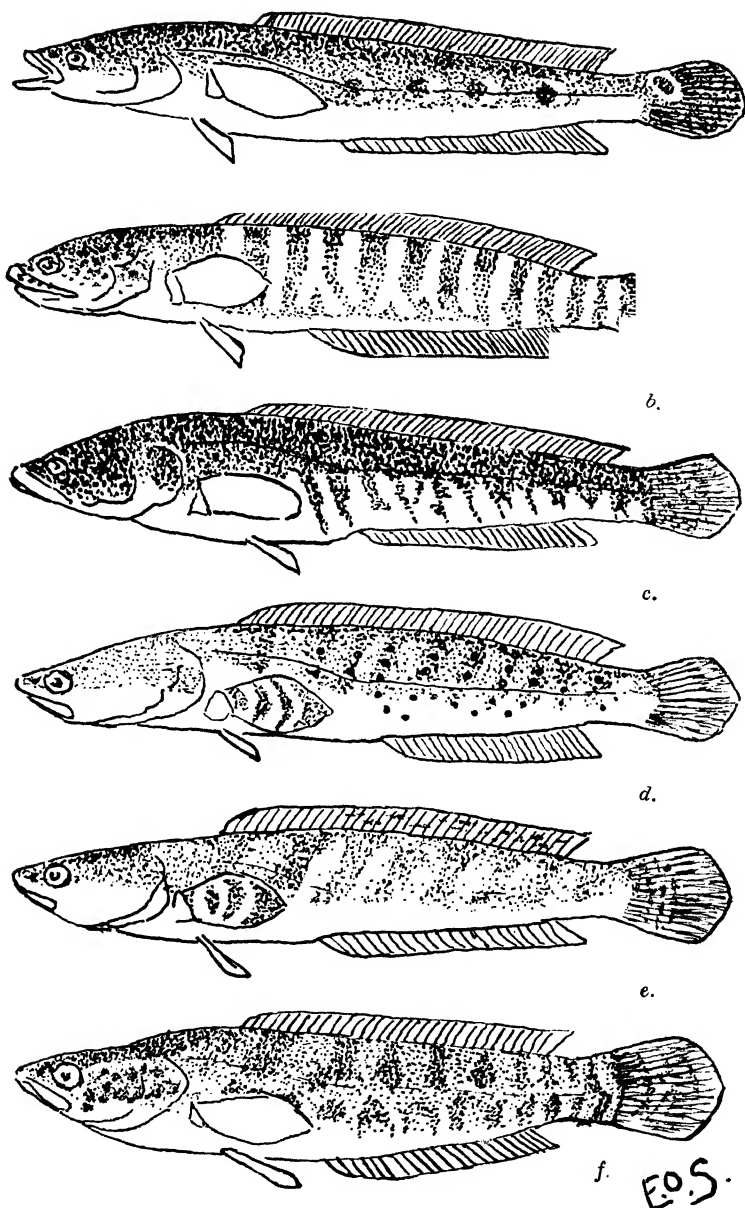
- (a) Pelvics $\frac{1}{3}$ rd. the length of pectorals ;—circular black spots each occupying part of a scale, base of dorsal iridescent blue in life .. *O. stewartii* (p. 123)
- (b) Pelvics $\frac{2}{3}$ the length of pectorals ; no black spots—*O. gachua* (p. 121)

Ophicephalus amphibius McClell.

1845. *Ophicephalus amphibeus*, McClelland, *Cal. Jour. Nat. Hist.*, V, p. 275.

Plates 1 and 6.

Note.—McClelland's *O. amphibius* is united with *O. barca* by Day under the latter name. The species here described does not agree with Day's description of *O. barca* but seems to agree, except in colour, with the scanty notes of McClelland's *O. amphibius* given in Day's *Fishes of India*. Dr. Hora is inclined to



TEXT-FIG. 125.—Species of *Ophicephalus* from Northern Bengal.

- (a) *Ophicephalus marulius* Hamilton; (b) *O. amphibius* McClelland;
 (c) *O. striatus* Bloch; (d) *O. stewartii* Playfair; (e) *O. gachua* Hamilton;
 (f) *O. punctatus* Bloch.

agree with Day in uniting the two species but, seeing that our specimens are all from the type locality of McClelland's *O. amphibius* and local names and habits agree, while the colours agree better with *O. amphibius* than with *O. barca* as described by Day, we have ventured to use McClelland's name.

Mechi : *Bora Cheng* ; Rabha : *Borna*.

D. 51. P. 17. V. 1/5. A. 34. C. 14. L. 1. 78. Barbels 2-retractile.

In shape almost identical with *O. marulius*. A pair of short, retractile, rostral barbels which are absent in the latter species.

Colour : A gorgeously coloured fish. The ground-colour is blue when viewed obliquely and iridescent green when viewed at right angles to the surface. On the body this colour is sprinkled with dark spots, uniform in size but irregular in shape. These spots are absent from the belly, sparse below the lateral line and increasingly plentiful towards the back where they coalesce. On the head the spots are larger and rounded, rich brown below the level of the eye and becoming darker and more plentiful towards the top of the head where they coalesce. The brightest blue (green) and richest brown are in the region of the upper lip. Along the body 13-16 more or less irregular vertical bands about equal in width to the interspaces between them and extending from the dorsal to below the lateral line. These are bright orange bordered with brown and merging into brown on the back and are free from dark spots. The dorsal has the basal half brown or orange, the outer half blue (green), darkening outwards but having a narrow pale blue or white edge. Pectoral deep orange. Pelvics blue. Anal iridescent blue (green) with a narrow dark border. Caudal brown at the base, then iridescent blue (green) with dark rays, then blackish with a narrow white or bluish-white border.

Size : Our longest was 18.4 inches.

Habitat : Russell obtained his specimens in the vicinity of the Chel River about 1845 and gave them to McClelland. Our specimens all come from this vicinity but Dent, who obtained these specimens, has subsequently received reports from Rabhas living immediately east of the Torsa which indicate that the species is found there also.

Habits : The young are found, during the rains, in flooded paddy-fields enclosed by forest. The villagers catch them and put them in their wells to grow. Large fish are found in water-pockets in the beds of dried-up streams in the forest. Russell records that they are found in holes as much as two miles from the river.

***Opicephalus gachua* Ham., *F.B.I.*, No. 1205.**

Bengali : *Cheng* গাং ; Nepalese : *Hili* हिली ; Mechi : *Naserainiselo* ; Rabha : *Na-ram* ; Hindi (Bihar) : *Chainga* चैंगा.

D. 32-37. P. 15. A. 21-23. C. 12. L. 1. 40-45.

Shape similar to that of *O. marulius*, but head scales larger.

Colour : Brown with a series of about eight darker brown bands sloping slightly forward from the vertical between the dorsal ridge and lateral line, sometimes produced below the later. Pectoral fin with three lighter zones alternating with darker. Day gives—'In the young there is often a large ocellus with a light edge on the last five dorsal rays.' We have never found this present.

Size : We have had them up to about 8 inches. Day gives : 'grows to at least 13 inches'.

Habitat : Muddy or clear streams and ponds from 2,000 feet downwards. Day gives—'Fresh waters throughout India, Ceylon, Burma and the Andamans, also near Gwadar on the Mekran Coast.'

***Ophicephalus marulius* Ham., *F.B.I.*, No. 1198.**

The Murrel.

Plate 4, fig. 2.

Bengali (local) : *Sāl* সাল, (Lower Bengal) : *Gajari* গজারি ; Hindi (Bihar) : *Bhor* भोर.

D. 45-55. P. 18. A. 28-36. L. 1. 60-70. No barbels.

Body sub-cylindrical tapering from the flattened, snake-like head to the rounded caudal.

Colour : Brownish or greenish-grey above, paler beneath. This species is lighter coloured than others in our area. Four or five large ocelli, dark brown with a hinder margin lighter than the ground-colour, on lateral line. These are not present in young fish. A well-marked ocellus, brown surrounded by a ring paler than the ground-colour, on the upper half of the base of caudal. This is not found in some large fish. The pectorals are not spotted or striated. Young fish are shaped like the adults but have a wide, orange-red band down each side.

Size : Day gives:—'attaining as much as 4 feet.' We have seen fish of this size in Siliguri bazaar ; those caught on rod and line in our rivers do not ordinarily exceed 1½ feet.

Habitat : Clear rivers of the Terai and Duars especially at their junction with a side stream but always in the neighbourhood of mud or fine sand. Day gives :—'Fresh waters, principally rivers, from Ceylon and India to China'.

Habits : Frequently takes a spoon and still more often dead bait. It can be a good fighting fish but frequently settles on the bottom after a preliminary demonstration on the surface. The mother is said to accompany the young which swim in close formation.

Ophicephalus punctatus Bloch., *F.B.I.*, No. 1206.

Plate 4, fig. 1.

Bengali (local): *Taki* টাকী, (Lower Bengal): *Lata* লতা;
Rabha: *Na-taki*.

D. 29-32. P. 17. A. 21-23. C. 12. L. 1. 37-40.

Shape very similar to that of *O. marulius*.

Colour: Brown on the back fading to lighter beneath. A series of about eight vertical darker bands above the lateral line alternating with a similar series below it. The last band before the caudal is continuous above and below the lateral line. Pectorals not spotted or striated.

Size: We have had them up to 7 inches long. Day gives—'up to a foot'.

Habitat: Streams in the hills up to 2,000 ft., muddy streams and tanks in the Terai and Duars. Day gives—'Fresh waters generally in the plains of India, stagnant preferred to running'.

Habits: Day, quoting Günther in Ceylon, records that a female was taken in February containing 4,700 large, besides some smaller, ova.

Ophicephalus stewartii Playfair, *F.B.I.*, No. 1204.

Plate 4, fig. 3.

Bengali: *Dudu-cheng* দুদুচিং, or *Tel-cheng* তেলচিং; *Rabha*:
Na-ram.

D. 39-40. P. 17. V. 6. A. 27. C. 14. L. 1. 45-50.

Shape similar to *O. marulius*, but the scales on the head are much larger.

Colour: Dark brown on the back fading to lighter on sides and belly. A series of about eight indistinct darker bands sloping forwards are generally visible above the lateral line and for a short distance below it. Some scales have a well-defined, circular, black spot. These spots are more plentiful above the lateral line where they roughly follow the darker bands. Below the lateral line they are fewer and more regularly arranged. The dorsal has a deep blue iridescence along its base, during life, and is white or white and orange along its outer edge. The chin is marbled and the pectorals spotted in zones.

Size: We have found them up to 18 inches. Day gives—'growing to about 10 inches'.

Habitat: Clear streams in the forests of the Duars. Day gives—'Cachar and Assam, in both running and standing water'.

Ophicephalus striatus Bloch., *F.B.I.*, No. 1203.

Plate 4, fig. 4.

Bengali : *Shōl* শোল ; Hindi (Bihar) : *Sowra* सोवरा.

D. 37-45. A. 23-26. L. 1. 50-59.

In shape this fish resembles *O. marulius*.

Colour : Very dark brown above the lateral line, this colour continuing below this line in irregularly-shaped streaks, roughly parallel and a little off the vertical (the upper end in advance of the lower). The rest of the lower half yellow or orange. The pectoral not spotted or striated. The young are orange-red, when 2 or 3 inches long.

Size : Our longest just over 2 feet. Day gives—'three feet or more'.

Habitat : Muddy rivers and tanks in the Terai and Duars. Day gives—'Fresh waters throughout the plains of India, Ceylon, Burma, China and the Philippines, especially delighting in swamps and grassy tanks'.

Habits : Dent says—'The young, 2 or 3 inches long, are orange-red in colour. On a flooded paddy-field, where the water is 2-3 feet deep, I have seen a mass of probably one or two hundred swimming all herded together like tadpoles. Although I have not actually seen the parent fish myself, all the local busti-wallahs assure me that the mother is always close by and will protect the young from danger.' Day says—'These fishes take a bait very readily, especially a frog, and are said to rise to a salmon-fly'.

Group XII.—THE GLOBE-FISH.

Tetraodon cutcutia Ham., *F.B.I.*, No. 1406.

The Globe-Fish.

Plate 4, figs. 12 and 13.

Bengali (North Bengal) : *Tepa* টেপা, (South) *Potka* পটকা ;
Rabha : *Gangthopa* ; Hindi (Bihar) : *Phukcha* फुकचा.

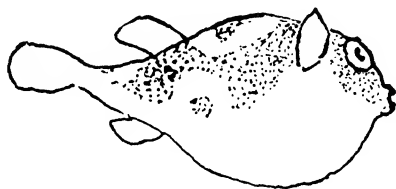
D. 10-11. P. 21. A. 10. C. 7.

Back broad, tapering rather abruptly to the tail. The fins are all rounded. There are no pelvic fins. Eyes large.

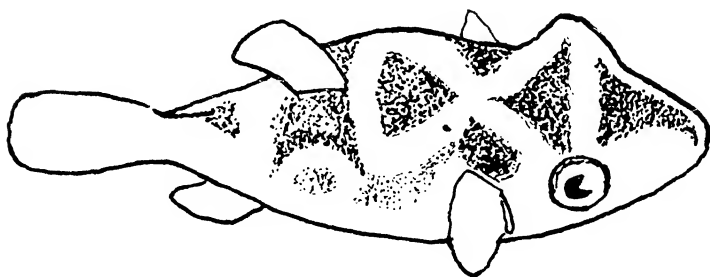
Colour : On the upper surface the pattern is in two shades, a lighter (moss-green, minutely mottled) and a darker (greyish-brown or black). The head is dark with one or more transverse light bars across the snout and another joining the eyes. The

light bar between the eyes forms the base of a dark triangle, the apex pointing backwards. A more or less triangular patch above each pectoral and a larger and denser one half way between the pectoral and dorsal. The apices of these four rough triangles are directed towards a point in the back mid-way between the pectorals forming a diagonal cross when viewed from above. Behind the dorsal the pattern is less definite except for a well-marked ocellus (dark centre with a light ring surrounding it) about where the lateral line might be expected to be and just above the anal. The chin and under side of the tail pearl grey; the remainder of the under surface white. The iris is golden yellow.

Size—Day gives: 'attaining about $3\frac{1}{2}$ inches' and we have had them up to about this size.



E.O.S.



TEXT-FIG. 126.—*Tetraodon cutcutia* Hamilton. The upper figure represents the fish when inflated. The lower shows the dorsal surface and side.

Habitat: Slow-flowing, clear streams in the Terai and Duars. Day gives—'Fresh waters of Orissa, Bengal, and Assam'.

Habits: When taken from the water they usually distend the oesophagus enormously with air so as to become co-spherical except for the short tail. In the water they constantly vibrate the pectoral, even when stationary, and appear to swim with the pectorals and dorsal only, often holding the tail on one side.

Group XIII.—THE SPINY EELS.

Mastacembelus armatus (Lacép.), *F.B.I.*, No. 1159.

The Spiny Eel.

Bengali (Northern Bengal): *Bām* বাঁম, (Southern Bengal) *Bheim* ভাইম; Nepali: *Chusi-bam* चुसीबाम; Rabha: *Na-kraing*; Hindi (Bihar): *Bami* बामी.

D. 32-39/74-90. P. 23. A. 3/75-88.

An eel-shaped fish tapering to head and tail. Snout as in *M. pancalus*. The vertical fins are confluent. No pelvic fins.

TEXT-FIG. 127.—*Mastacembelus armatus* (Lacépède).

Colour: Rich brown above, paler beneath. An undulating pattern in dark brown between the lateral line and the dorsal ridge is usually more pronounced posteriorly. It is sometimes produced forward as a blackish line through the eye.

Size: Usually a larger fish than *M. pancalus* and 'attains two feet or more'. (*Day*) The largest we have found was about a foot long.

Habitat: Clear streams throughout the Tarai and Duars. *Day* gives—'From Sind, throughout the fresh and brackish waters of the plains and hills of India, Ceylon and Burma to China'.

Mastacembelus pancalus (Ham.), *F.B.I.*, No. 1158.

The Smaller Spiny Eel.

Bengali (local): *Turi* তুরী, (Lower Bengal): *Pañkal* পাঁকাল; Rabha: *Thuri-bandha*; Hindi (Bihar): *Gaincha* गैंचा.

D. 24-26/30-42. P. 19. A. 3/31-46. C. 12.

TEXT-FIG. 128.—*Mastacembelus pancalus* (Hamilton).

An eel-shaped fish tapering to head and tail. Scales minute. The long, fleshy snout has a tri-lobed extremity with a concave,

but not striated, lower surface. The first dorsal consists of free spines, increasing in length posteriorly. The soft dorsal and anal are separated from the caudal by a small notch. No pelvic fins.

Colour : Greenish olive along the back, yellowish beneath ; fins yellow with black spots.

Size : Day gives—‘ at least 7 inches ’. Our longest was about half this size.

Habitat : Streams of the Terai and Duars. Day gives—‘ Large rivers of India and localities near the sea ’.

***Rhynchobdella aculeata* (Bloch), *F.B.I.*, No. 1155.**

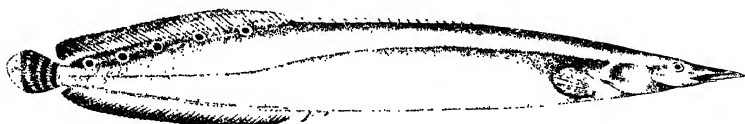
Plate 4, fig. 8.

Bengali : *Goichi* গুইচী ; Hindi (Bihar) : *Patgaincha* पतगैंचा.

D. 1-20/44-54. P. 23. A. 0-3/44-52. C. 15.

An eel-shaped fish tapering to head and tail. Scales minute but lateral line well-marked.

The long, fleshy snout has a tri-lobed extremity with a concave, striated lower surface, the lower jaw being much shorter. Teeth minute. The first dorsal consists of free spines, 16-20 in number according to Day, but one large specimen which we obtained from the Magurmari River (Apalchand Forest, in the west of the Duars) differed from the rest in having only one external dorsal spine and no anal spines. We at first took this to be a new species but Dr. Hora, on dissection, found traces of the usual number of spines beneath the skin. Dorsal and anal fins not confluent with the caudal. No pelvic fins.



TEXT-FIG. 129.—*Rhynchobdella aculeata* (Bloch).

Colour : Greenish or brownish-grey above fading to yellowish beneath, almost uniform with the exception of a faintly lighter longitudinal band between the lateral line and dorsal ridge extending from the base of the caudal fin, over the eye, to half way along the snout. Fins light brown with darker mottling. Some specimens, usually the smaller ones, have a series of 3 to 9 large black ocelli, having a white or buff edge, along the base of the dorsal.

Size : Day gives—‘ Attaining 15 inches ’ our longest 14 inches.

Habitat : Most of our specimens were from muddy streams in the Apalchand Forest in the west of the Duars. Day gives—

'Brackish waters within tidal influence' but Inglis says it is common in Bihar where it is known as *Patgaincha*.

Group XIV.—THE MUD EEL.

Amphipnous cuchia (Ham.), *F.B.I.*, No. 70.

Bengali : *Kuchia* or *Kunche* কুচিয়া or কুন্চে.

D. very rudimentary ; P., V., A., and C. absent.

An eel-shaped fish with a tapering tail which is flattened in a vertical plane.

Fins : The only fin, the dorsal, is situated just in front of a vertical from the vent.

Scales : Distinct and longitudinally arranged.



TEXT-FIG. 130.—*Amphipnous cuchia* (Hamilton).

Colour : Dark brown above with numerous still darker spots ; orange-brown without spots beneath.

Size : Our longest specimen was 2 feet.

Habitat : Mud holes in paddy fields in the Duars and Terai. Day gives—'Fresh and brackish waters of the Punjab, Bengal, Orissa, Assam, and Burma'.

Habits : Hamilton writes : 'Natives reject it 'as food and imagine that its bite is fatal to cattle, although less 'powerful on the human kind—a supposition highly improbable'. It is sold and eaten in the Duars and we have seen it handled quite freely, in fact the only way to catch it is to grope for it with the hands in mud.

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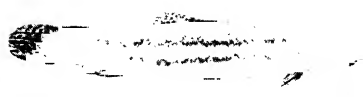
पतगेंचा, 127.
 पुटौ, २२
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EXPLANATION TO PLATE 2.

- FIG. 1.—*Nemachilus botia* (Hamilton).
 „ 2.—*Lepidocephalichthys guntea* (Hamilton).
 „ 3.—*Psilorhynchus balitora* (Hamilton).
 „ 4.—*Barilius shacra* Hamilton.
 „ 5.—*Danio devario* Hamilton.
 „ 6.—*Labeo pangusia* (Hamilton).
 „ 7.—*Labeo dero* (Hamilton).
 „ 8.—*Aspidoparia jaya* (Hamilton).
 „ 9.—*Cirrhitina reba* (Hamilton).
 „ 10.—*Barilius vagra* Hamilton.
 „ 11.—*Labeo gonius* (Hamilton).
 „ 12.—*Crossocheilus latia* (Hamilton)
 „ 13.—*Rasbora elenga* (Hamilton).
 „ 14.—*Chela bacaila* Hamilton.
 „ 15.—*Danio aequipinnatus* (McClelland).
 „ 16.—*Laubuca laubuca* (Hamilton).



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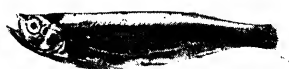
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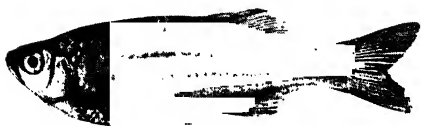
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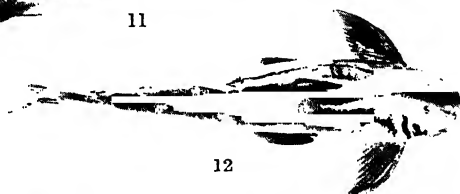
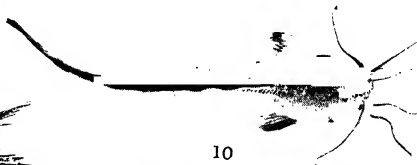
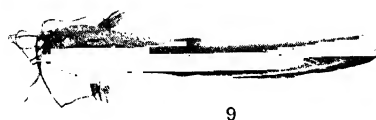
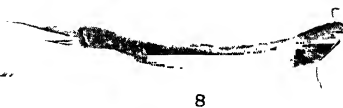
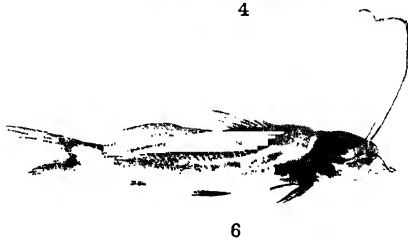
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EXPLANATION TO PLATE 3.

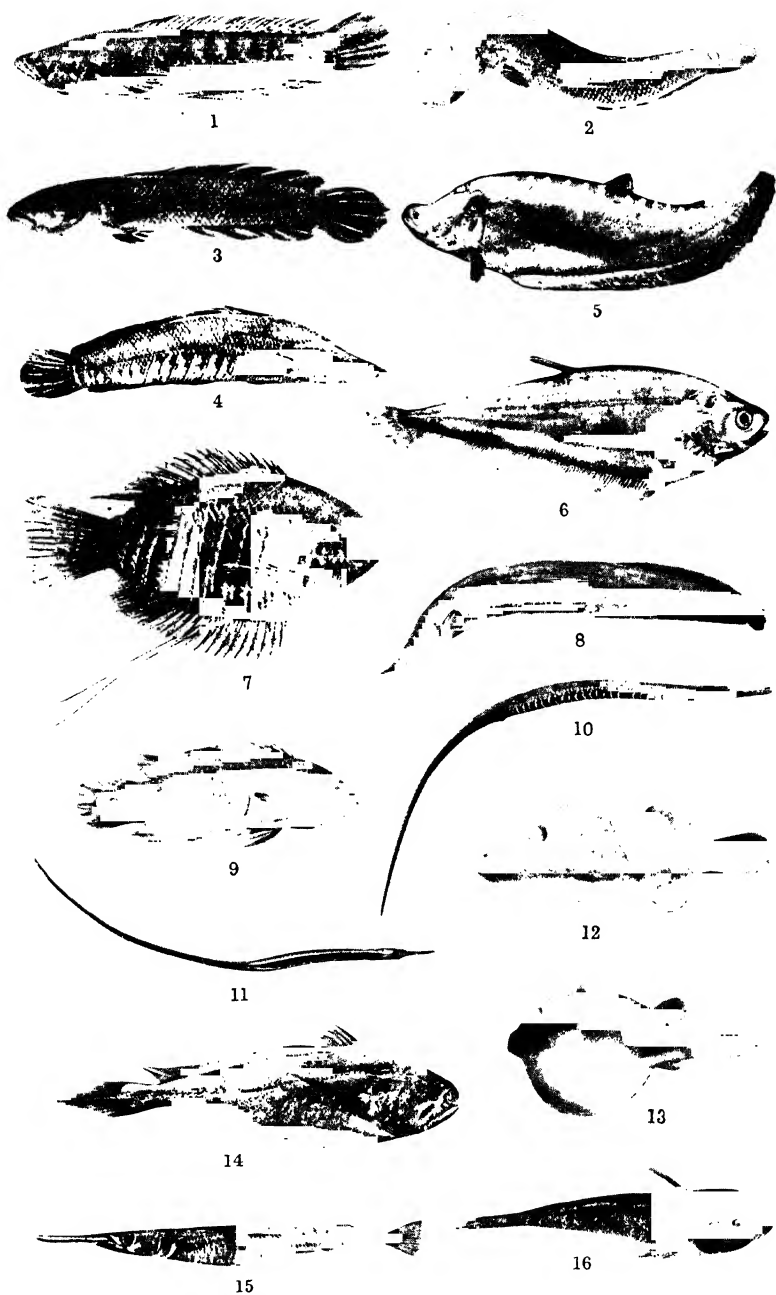
- FIG. 1.—*Mystus senghala* (Sykes).
 „ 2. *Mystus menidia* (Hamilton).
 „ 3. *Mystus cavasius* (Hamilton).
 „ 4.—*Leiocassis rima* (Hamilton).
 „ 5. *Wallago attu* (Bloch & Schneider).
 „ 6.—*Mystus bleekeri* (Day).
 „ 7.—*Callichrous pabda* Hamilton.
 „ 8.—*Olyra kempi* Chaudhuri.
 „ 9. *Heteropneustes fossilis* (Bloch).
 „ 10.—*Cariacus batrachus* (Linnaeus).
 „ 11.—*Pseudocutropius garua* (Hamilton).
 „ 12.—*Pseudocheneis sulcatus* (McClelland).
 „ 13. *Erethistes bara* (Hamilton).
 „ 14.—*Chaca chaca* (Hamilton).



FISHES OF NORTHERN BENGAL.

EXPLANATION TO PLATE 4.

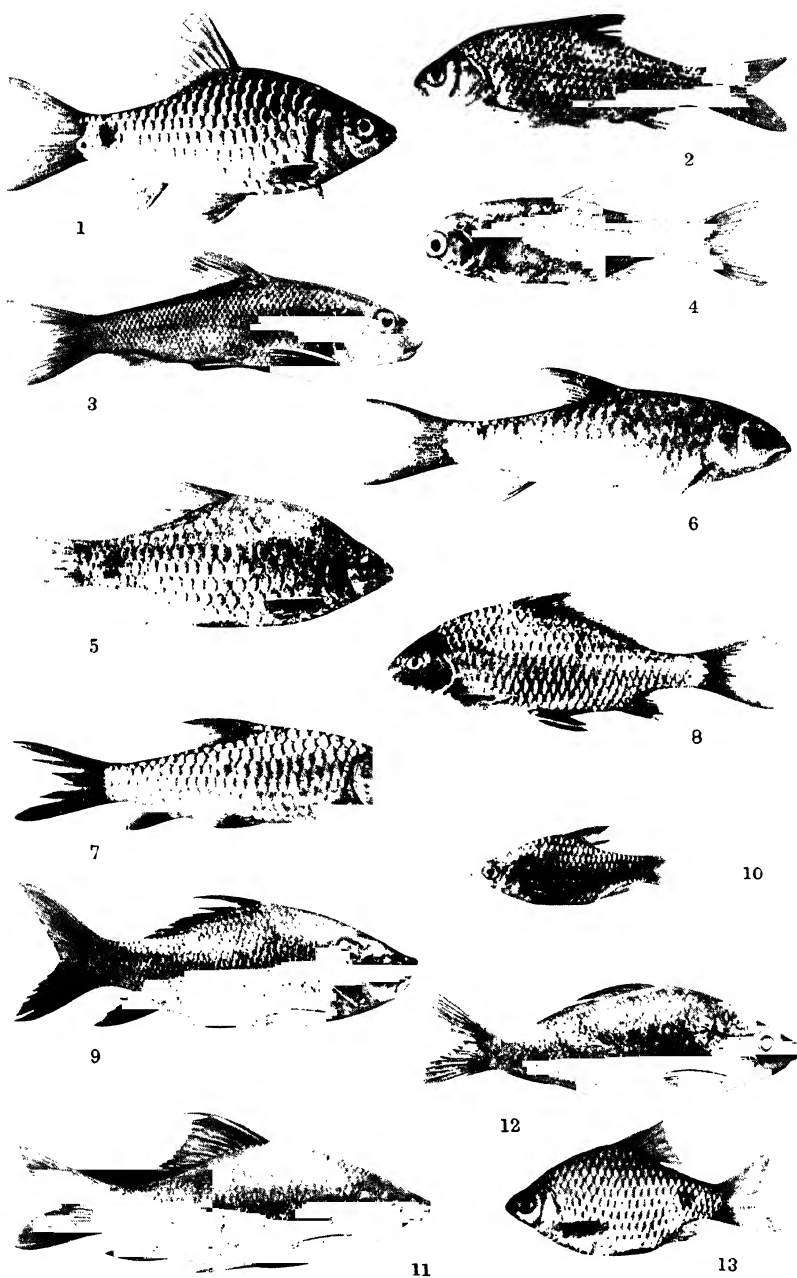
- FIG. 1.—*Ophicephalus punctatus* Bloch.
 „ 2.—*Ophicephalus marulius* Hamilton.
 „ 3.—*Ophicephalus stewartii* Playfair.
 „ 4.—*Ophicephalus striatus* Bloch.
 „ 5.—*Notopterus chitala* (Hamilton).
 „ 6.—*Notopterus notopterus* (Pallas).
 „ 7.—*Trichogaster fasciatus* (Bloch & Schneider).
 „ 8.—*Rhynchobdella aculeata* (Bloch).
 „ 9.—*Badis badis* (Hamilton).
 „ 10.—*Doryichthys deocata* (Hamilton). Female.
 „ 11.—*Doryichthys deocata* (Hamilton). Male.
 „ 12.—*Tetraodon cutcutia* Hamilton. When in water.
 „ 13.—*Tetraodon cutcutia* Hamilton. When taken out of
 water.
 „ 14.—*Sciænoides pama* (Hamilton).
 „ 15.—*Xenentodon cancila* (Hamilton).
 „ 16.—*Glossogobius giuris* (Hamilton).



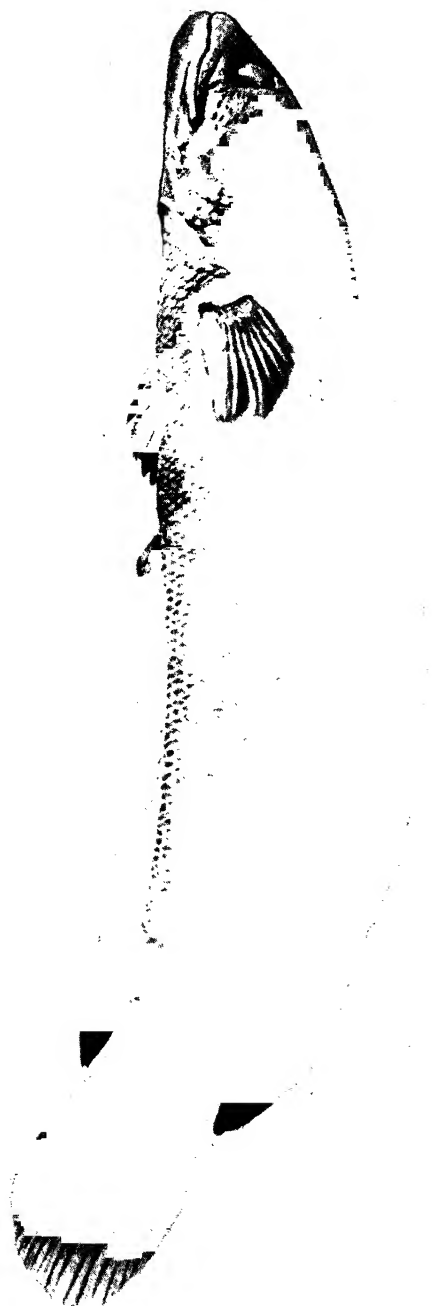
FISHES OF NORTHERN BENGAL

EXPLANATION TO PLATE 5.

- FIG. 1. —*Barbus stigma* (Cuvier & Valenciennes).
,, 2. —*Barbus sarana* (Hamilton).
,, 3. —*Barbus chaquiao* (Hamilton).
,, 4. —*Amblypharyngodon mola* (Hamilton).
,, 5. —*Barbus tilius* (Hamilton).
,, 6. —*Lissocheilus dukai* (Day).
,, 7. —*Barbus pititora* (Hamilton).
,, 8. —*Semiplotus semiplotus* (McClelland).
,, 9. —*Catla catla* (Hamilton).
,, 10. —*Barbus tieto* (Hamilton).
,, 11. —*Labeo calbasu* (Hamilton).
,, 12. —*Labeo nandina* (Hamilton).
,, 13. —*Barbus conchanius* (Hamilton).



Ophichthus amphibius Metcalf and.



YEAR-BOOK
OF THE
ROYAL ASIATIC SOCIETY OF BENGAL

VOLUME III

1937

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OF THE
ROYAL ASIATIC SOCIETY OF BENGAL
VOLUME III
1937



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PROCEEDINGS OF THE ANNUAL MEETING, 1937.

FEBRUARY.

The Annual Meeting of the Royal Asiatic Society of Bengal was held on Monday, the 15th February, 1937, at 5-30 P.M.

PRESENT.

HIS EXCELLENCY THE RIGHT HONOURABLE SIR JOHN ANDERSON, P.C., G.C.B., G.C.I.E., GOVERNOR OF BENGAL, Patron and President, in the Chair.

Members :

Bagchi, Dr. K. N.	Jain, Mr. C. L.
Bivar, Mr. H. G. S.	Jenkins, Dr. W. A.
Bose, Mr. M. M.	Ledrus, Rev. M.
Bothra, Mr. S. K.	Mahtab, Maharajadhiraj Bdr. B. C.
Brocke, Dr. A. G.	Mahtab, Maharaj-Kumar U. C.
Brown, Mr. Percy	Manen, Mr. Johan van
Brahmachari, Dr. P.	Martin, Capt. M. F. C.
Brahmachary, Rai Bahadur S. C.	Mitter, Hon'ble Sir B. L.
Cakter, Mr. C. C.	Mitter, Mr. S. C.
Chakravarti, Prof. Chintaharan	Modi, Mr. J. J.
Chanda, Rai Bahadur R.	Mookerjee, Mr. B. G.
Chatterjee, Mr. Patit Paban	Mukherjee, Dr. J. N.
De, Mr. K. C.	Mullick, Mr. M. L.
Dunn, Mr. J. A.	Nandy, Maharaja S. C.
Ezra, Sir David	Olpadvala, Mr. E. S.
Flury, Mr. E. C.	Rahman, Mr. S. K.
Ghosal, Dr. U. N.	Ray, Dr. H. C.
Ghose, Mr. Sushil Chandra	Rossetti, Mr. F.
Ghose, Mr. T. P.	Roy, Rai Bahadur Sarat Chandra
Haq, Prof. M. Mahfuz-ul	Selzam, Dr. E. von
Heron, Dr. A. M.	Sen, Mr. J. M.
Hora, Dr. S. L.	Sen, Mr. D. M.
Hobbs, Mr. H.	Wadia, Mr. D. N.
Hosain, Dr. M. H.	White, Mr. J. C.
Jack, Hon. Mr. Justice R. E.	Wilson, Dr. H. E. C.

and others.

Visitors :

Aiman, Mrs. J. S.	Flury, Mrs. E. C.
Bhatia, Dr. B. L.	Ghatak, Mr. N.
Bingham, Mr. George E.	Ghose, Mr. H. N.
Bose, Mr. H. K.	Ghosh, Dr. J.
Bose, Mr. S. M.	Goetz, Dr. Hermann
Chakravarti, Mr. P.	Goetz, Mrs.
Cholaapke, Mr. K.	Hoskins, Capt. G. H.
Colson, Mr. L. H.	Knight, Rev. P.
Das Gupta, Mr. K. C.	Knight, Mrs.
De, Mr. H. K.	Macfarlane, Mr. J. B.
De, Mrs. K. C.	Macfarlane, Mrs.
Deb, Raja Kshitindra	Mahalanobis, Mr. S. C.
Ellis, Mr. Norman A.	Majumdar, Mr. S. K.

Maltley, Mr. G. A.
 Mandal, Miss Rahel
 Mitter, Mr. N. C.
 Modi, Miss Khorsed
 Modi, Miss Mehera
 Modi, Mrs. Rhoda
 Neste, Rev. J. van
 Pinnell, Mr. L. G.
 Podenwils, Count
 Pringle, Mr. R. J.
 Rossetti, Mrs.
 Sahni, Dr. M. R.
 Sahni, Mrs.

Sarkar, Sir Jadunath
 Scallan, Frank C.
 Scallan, Mrs.
 Sen, Lt.-Col. J. L.
 Sen, Mrs.
 Sharafuddin, Mrs. S.
 Sinha, Mr. R. K.
 Touseh, Mr. D.
 Tuxen, Dr. Paul
 Verstraten, Rev. X.
 Wyer, Mr. A. F. van de
 Wyer, Mrs.

and others.

The General Secretary and the Honorary Treasurer received the President, His Excellency the Governor of Bengal, at the entrance of the Society's building.

The retiring Council assembled at the head of the staircase to receive His Excellency and were presented to him.

Then the President for 1936 declared the Annual Meeting open and said :—

‘LADIES AND GENTLEMEN,

Voting papers for the election of the new Council as well as voting papers for the election of Ordinary Fellows will be distributed to all the Ordinary Members present.

I request the Ordinary Members present to deliver their votes in the collection box which will be sent round to them.’

After the distribution of the voting papers the President said :—

‘LADIES AND GENTLEMEN,

Have all votes been delivered? If yes, I call upon Messrs. H. Hobbs and Percy Brown to act as scrutinizers.

I now call upon the General Secretary to present the Annual report for 1936.’ (See page 25.)

After the presentation of the Annual Report by the General Secretary, the retiring President delivered his Annual Address. (See page 8.)

After the reading of the Annual Address, the General Secretary transmitted to the President the results of the Council election.

The President while announcing the results of the Council election said :—

‘LADIES AND GENTLEMEN,

I now announce the result of the Council vote. On the report of the scrutinizers, I have the pleasure to declare all the candidates for the next year set forth in the Ballot paper duly elected.’ (See page 19.)

The President briefly thanked the Society for his re-election.

Then the President for 1937 made the following announcements :—

'I have now great pleasure in announcing that, having heard the report of the scrutineers, I declare the following Ordinary Members:—

1. Dr. K. N. Bahl,
2. Rao Bahadur K. N. Dikshit,
3. Dr. N. N. Law,
4. Dr. J. N. Mukherjee,

duly elected Ordinary Fellows of the Royal Asiatic Society of Bengal.'

'I have now to announce that no papers have been received in competition for the Elliott Prize for Scientific Research for the year 1936 which was for Mathematics.

The prize for 1937 will be for work in Chemistry regarding which a detailed announcement has been published in the *Calcutta Gazette* and the *Bihar and Orissa Gazette*.'

'My next announcement regards the Annandale Memorial Medal. This medal is awarded every three years for conspicuously important contributions to the study of Anthropology in Asia.

This year the medal is awarded to Dr. John Henry Hutton, C.I.E., I.C.S., lately Deputy Commissioner of Assam, and the late Census Commissioner of India, for his long-sustained and distinguished labours in the field of Anthropological research.'

After these announcements, Sir David Ezra, Senior Vice-President, moved the following hearty vote of thanks to His Excellency:—

'The proceedings have come to an end and now I would like to propose a hearty vote of thanks to His Excellency in the triple function of Governor, Patron of our Society and its President. You all will agree that we have rarely listened to so thoughtful and suggestive an address at our Annual Meetings, as we did this evening. It is not for me to detail all the high qualities which make us feel proud of our President and cherish affectionate feelings for His Excellency. Be it sufficient that we thank His Excellency, that we express our admiration and gratitude to His Excellency. Godspeed on his further journey through life.

Ladies and Gentlemen, three cheers for His Excellency.'

The President made the following final announcement:—

'In declaring the Annual Meeting dissolved, I now invite the Members and visitors to inspect the exhibits shown at the other end of the hall.'

The General Secretary conducted the President for examination of the collection of exhibits (see page 20) and then accompanied him to the entrance on his departure.

ANNUAL ADDRESS, 1936-37.

A STUDY OF THE CONCEPTION OF POWER IN THE SOCIAL ORGANISM.

I. INTRODUCTION.

Before I proceed to the subject on which I propose to address you this evening may I say how sensible I am of the honour you have done me by electing me to be your President. I am happy moreover that in this year of its annals the Society has by permission of His Imperial Majesty the King-Emperor become the Royal Asiatic Society of Bengal. This title is a recognition that the Society has earned for itself a worthy place among the learned societies of the Empire.

I have to record the loss by death of two outstanding members, Sir Rajendra Nath Mookherjee and Colonel Knowles. In Sir Rajendra Nath we have lost a personality whose steadfastness of principle, keenness and balance of intellect, and record of successful endeavour will long stand as an example to his countrymen, and I personally have like many of you lost a valued friend. He was a member of over thirty years' standing, our President in 1924 and 1925 and an Honorary Fellow since 1929.

Colonel Knowles, a member since 1920 and a Fellow since 1927, was for many years a tireless and enthusiastic Medical Secretary of this Society, a man of great industry and deep learning and of a most winning disposition. In recognition of his services to tropical medicine I had the pleasure, rather more than a year ago, of investing him with the Insignia of a Companion of the Order of the Indian Empire and was struck then by the precarious state of his health. He refused to give up and died, as no doubt he wished, in harness.

During this year our General Secretary, Mr. Van Manen, who had not had leave for nearly nine years, was granted six months' leave for medical reasons. We are delighted to see him back with us reduced in figure but restored in health and as exuberant as ever in learning and good humour.

Among gifts to the Society worthy of special mention I have to record an excellent portrait in oils painted by Atul Bose of the late Sir C. C. Ghosh, President of the Society in 1932 and 1933 and a member of the Council for several years. It was presented by his brother Mr. D. C. Ghosh.

We have also received as a permanent loan a collection of 12,000 Sanskrit Manuscripts made over by the Government of India.

II. A STUDY OF THE CONCEPTION OF POWER IN THE SOCIAL ORGANISM.¹

The choice of the subject on which I propose to address you this evening requires some comment. Before being concerned with the art of Government I was for some time a student of science. The preoccupations of later years have left me no leisure to pursue those earlier studies in detail but perhaps as a result I have been led into speculations that would not have occurred to me had I myself developed on other lines.

I propose to suggest under this heading—‘A Study of the Conception of Power in the Social Organism’ a few reflections which attempt to bring the conclusions of the biologist into relation with the conclusions—still inchoate—of the student of the social and political organization of mankind.

Necessarily with the very limited leisure at my disposal, I must confine my attempt to suggesting fields of enquiry rather than putting forward conclusions: and should any proposition that I seem to suggest appear untenable let me take refuge in the quotation that² ‘a false theory that can be compared with facts may be more useful at a given stage of development than a true one which is beyond the comprehension of the time’.

Power is a concept common to biological, philosophical and political studies. In the biological sphere power is a characteristic of every living thing that is capable of influencing some other thing: in some form or other it is an essential concomitant of life: in the sphere of philosophy the study of power is the essence of the subject. What is the nature of this thing that impinging from outside upon the bodies and minds of men can change their form and their development? What is its source—how does it behave—how should men comport themselves towards it? The study of politics is concerned with the basis, the nature, the obligations and the purposes of authority, which is but another name for power in the hands of the body politic.

But my theme is the attitude of men towards power rather than power itself: what have men conceived its nature to be? Is there traceable in those various conceptions any development comparable to the development in the physical organism that is known to the biologist as evolution?

If there is any such development is it progressive—does it point to an ultimate conclusion—can we compare the attitude towards power or authority of different men at different times and say that this or that attitude is an index of a higher develop-

¹ In the text the term ‘Social Organism’ is used as including both social and political developments unless the contrary is made clear in the context.

² *Encyclopædia Britannica*, 14th Edn., Vol. 20, p. 116.

ment in the social organism than some other attitude? If so, can we trace anything like an ordered evolution in the social and political development of mankind and can we forecast its direction?

I do not presume to answer these questions but if I should in this brief address provoke thought or stimulate research by others equipped by leisure and talents for the task, I shall make no apology for having failed to contribute a more technical thesis to the records of this Society.

The history of man may be described in one aspect as an endeavour first to adjust himself to his environment and later to control that environment itself: by his success in adjustment—by a process of submission to the apparently inevitable—he has survived: by the development of reason he has been emboldened to believe that not content with submission to environment he may aspire to control the forces and conditions that surround him and through them to control his own evolution. Comparably perhaps with this change in outlook, the attitude of man towards natural forces and social authority has also changed.

Let us cull a few specimens. Browning in his poem 'Caliban upon Setebos' gives us a picture of a primitive man's conception of power—an imaginative picture perhaps but not for that reason necessarily at variance with inferences drawn from scientific enquiry.

Caliban the half-man, lying at his ease on a fine afternoon, speculates on Setebos his god—invests him with his own characteristics—finds him powerful and capricious—why not?—is capricious himself for that matter. Somewhere above Setebos, he thinks, there may be something remote and incomprehensible that he can only call 'The Quiet'—but that is no concern of his: Setebos is the one that matters to him. And when suddenly a fierce tropical storm breaks in upon his meditations Caliban curses himself for daring to speculate upon his god and grovels in terror and penance before the wrath of Setebos.

We thought perhaps we had travelled a long way from that conception of power but it only needed the capricious insecurity of a world war to bring it back. A modern American novelist¹ writing shortly after the war compares the race of mankind to a swarm of ants trying to escape from a log burning on his camp fire. 'I remember thinking at the time' he writes 'that it was the end of the world and a splendid chance to be a Messiah and lift the log off the fire..... But I did not do anything but throw a tin cup a water on the log so that I would have the cup empty to put whisky in..... I think the cup of water on the burning log only steamed the ants'. The old

¹ 'A Farewell to Arms.' Ernest Hemingway, Ch. XLI.

conception of power is there though the grovelling and the terror has yielded place to grim endurance: except for that we are back at the beginning of the circle. But perhaps this conception of the nature of power is not the whole truth.

From Caliban to magic—to spells, and to the ‘mantra’ in its primitive conception seems but a natural process. Man is still weak in the physical forces he can bring to bear on nature, weak also except in the strength of his own arm in the forces he can bring to bear on his fellow men. But he has begun to perceive a sequence in things, and if one thing can follow another or be caused by another, why should he not hit on the means of causing things far beyond the limit of his own strength?

Power itself becomes an abstract conception. An interesting illustration of this conception is quoted in a book by Dr. G. van der Leeuw¹ from an account written in 1899 by Codrington, an English missionary, of the Melanesians. ‘He drew attention to a remarkable conception of that people which he found indicated as “*Mana*”. He describes it as a force, not physical, but also not spiritual in one sense—in a certain sense it is “supernatural”. It makes a thing—a man—an animal into what they are.’ I cannot help thinking of the Platonic ‘*Idea*’ as an interesting gloss—but to return to *Mana*. ‘If anything is great or very powerful, or dangerous, then the presence of much *Mana* is indicated. The whole of the Melanesian religion consists in the obtaining of this *Mana* for oneself, or in contriving that it works for one’s own good.’ That last observation could be applied to much political theory and practice to-day: but let me continue. ‘This force may best be compared to an electric current. Something may be charged with it, and then its force develops into a beneficent or dangerous direction. One can do much with it but has also to be very careful with it.’ I am tempted to compare an ancient and very true Chinese proverb which says—‘Don’t ride on a tiger—you can’t dismount at will’. In other words ‘Don’t catch a wolf by the ears’.

To master and employ this mysterious quality instead of dreading and evading it is the beginning of magic: it is also the beginning² of conscious human development. To understand it and to know the ends for which it should be used is the purpose of philosophy, politics and morality.

Magic is power only so long as it works: but in so far as the performer can induce others to believe that it will work, magic still retains its potency over the human mind. ³‘The universe is under the power of the gods—the gods are under the power

¹ Introduction to the History of Religion—Van der Leeuw, Haarlem, 1924.

² Dictionary of Philosophy and Psychology, Vol. II, pp. 35-36.

³ Encyclopædia of Religion and Ethics, Vol. 3, p. 441.

of mantrams: the mantrams are under the power of the Brahmins: therefore the Brahmins are our gods.' This is a quotation that may sound strange to modern political thinkers, but is it so far removed from the ideas of those who in the political sphere pin their faith to doctrines not founded upon experiment but formulated *a priori* for acceptance as a creed? Looking at large portions of the world to-day can it be denied that magic spells long discredited by experiment in the sphere of the natural sciences still retain their potency in the sphere of political theory? But I am digressing.

While men were still attempting to discover the secret of control over the forces of nature, others, perhaps stronger of arm, perhaps with a more limited and more practical vision, had demonstrated the power that can be attained by organizing and controlling their fellow men. We do not know when first the tribe arose from the family to become a nation or when first a nation became an empire, but of this we can be fairly sure that the process was one of discipline and organization—of the growth of law—not by any means what we might regard as just laws—but of well-recognized laws made by men for their own purposes: we see man building up within an incomprehensible universe a comprehensible microcosm—an environment which he could control. Power takes on a new aspect—it becomes a force consciously wielded and directed to definite ends—futile ends perhaps because they may not have been the ultimate ends towards which the social organism must move or be moved if it is to survive.

At the close of the eighteenth century Tshaka,¹ the head of a small tribe of Zulus, set out to master his neighbours by organizing his tribesmen into regiments after an example originally derived from the Europeans. He carried his organization of his fellow men to the point of forbidding, under pain of death, any intercourse between the sexes except under licence—a licence granted only as a reward to the bravest and most successful of his regiments. The coward or the regiment that failed in battle was ruthlessly wiped out. In the eighteen years or so of his rule, we are told, he directly or indirectly caused the death of about two million souls and revolutionized the lives of the population within a radius of 500 to 1,000 miles from his capital. His social system lasted till the Zulu War of 1879: it produced, we are told, 'that innocence and general attractiveness that we habitually associate with naive intelligence, strong physique and an exacting foe'. But its basis was in fear and its justification was success in war: with failure in war and removal of fear it ended. It is interesting to be told that the occasion—

¹ 'Tshaka, the great Zulu Despot,' James Stuart, 'United Empire', 1924 (Vol. XV, new series).

I do not say the root cause—of that war was the escape of a Zulu girl and her recapture by the Zulus in British territory.

I need not refer in this company to the great empires of history of which none have survived intact as social organizations: but whatever the fate of the individual enterprise, the conception of power derived from the organization of mankind has survived.

Now let us come to a conception of power in the universe so revolutionary that even to-day it remains no more than a conviction. I refer to the conception that all the forces in the universe including those which underlie the development of man himself as a physical, social and moral being are subject to principles which by analogy can be described as laws: moreover, that those laws are essentially good if only because, being inevitable, they constitute the criterion of what is good: and that in the knowledge and understanding of those laws—could man ever understand them—lies the knowledge of good and evil and of man's ultimate destiny. This is a conception which in a loose kind of way is so often taken for granted that we forget how revolutionary such an idea was and is, and how profound are its implications. Its precise origin in point of history is so far as I know untraced, but we can say that at one period at least—between roughly the seventh and the second century before the Christian era—such a conception had appeared in the East and in the Mediterranean, sometimes in the form of religious teaching and at other times in that of philosophical speculation.

What is the basis of this conception? Did man import the conception of order into the universe merely on the analogy of the partial order he had established in his own social microcosm and found to be better for his immediate purposes than absence of order? Or may it be that in the search after the true basis and uses of power in the social organism man is seeking for something real and ultimately discoverable because that and nothing else will ultimately make possible his survival and continued evolution as a rational species?

It is at any rate a fact that from this same period date the first recorded speculations on the basis, the nature and the purpose of authority in the social and political microcosm. It is obvious that the natural and political sciences have not kept pace in development, the one at different times seeming to outstrip the other. Men were of necessity experimenting in the social organism and getting empirical results long before the beginning of scientific experiment as we understand it: but unlike the man of science the ruler of men cannot control his experiment and, if one fails, he may be too late to try another.

Nevertheless, variations are discernible in the conception of power in the social sphere. As to its basis, it has been con-

ceived as based on fear, on magic or its equivalent, on worship and on rational acquiescence arising from understanding. Social power must from the earliest times have been recognized as accompanied by responsibility—if only a responsibility for the preservation of the ruler himself. The so-called democratic political thought of Greece recognized the responsibility of the State only as extending to the interests of those of its component individuals who were entitled to the full rights of citizenship: in mediæval Europe States and their populations were patrimonies to be inherited or acquired by marriage or warfare; and to Bacon¹ the prime responsibility was for the preservation and aggrandizement of the State itself. That the State or the social organism should be responsible for providing the greatest scope for the physical, intellectual and moral development of all individuals within its confines is still a new conception: and linked with it is the conception of the structure of the State as a thing that itself must be open to change and development, in order to provide that changing environment in which man may continue his further evolution as a rational being.

As to the employment of power some regard it as an evil to be avoided: others would contrive a balance of authority in the social organism, to maintain just that essential degree of stability and material prosperity that may permit the development of the individual; others again conceive of power in the social organism as a thing to be centred in strong hands, in order that the individual life may be organized to fulfil the predetermined purposes of the ruler. One school of thought conceives the free working of the individual reason as the only means by which the true nature and uses of authority in the social organism can be ultimately discovered. Another sees men in the mass like a bar of soft iron, its molecules each magnetic but neutralizing each other, and needing only the application of an external magnetic force to draw them into unison and convert the inert mass itself into a powerful magnet to be employed by the master mind.

I do not say that in practice any of these conceptions is held and acted on to the exclusion of the other by any particular type of body politic. Democracies may be capricious, incomprehensible and tyrannical in no less degree than autocracies may have shown toleration and enlightenment. The most convinced believers in rational consent as the basis of authority may be led into the most drastic interference with individual liberty in the attempt to secure that environment of stability and prosperity without which social evolution cannot proceed: the believers in dominant personality may often trim their sails to the wind: but the differences in the underlying conception of authority remain.

¹ Bacon, *Essay* 29.

Such then are some of the variants of men's conception of power in the social organism. Have they a comparative value and if so by what standard can we value them? Is it possible to say that one is more likely to be on the main line of evolution than another?

Clearly no one can say that any of these conceptions has alone survived to the extinction of another. Yet this also is not surprising for evolution does not work in a straight line, and the data of history for all their volume and variety are not comparable to the data of experimental science.

This is what Fisher ¹ says after completing a study beginning with primitive man and ending with Communism and Fascism:

'One intellectual excitement has, however, been denied me. Men wiser and more learned than I have discerned in history a plot, a rhythm, a predetermined pattern. These harmonies are concealed from me. I can see only one emergency following upon another as wave follows upon wave, only one great fact with respect to which, since it is unique, there can be no generalizations, only one safe rule for the historian; that he should recognize in the development of human destinies the play of the contingent and the unforeseen. This is not a doctrine of cynicism and despair. The fact of progress is written plain and large on the page of history; but progress is not a law of nature. The ground gained by one generation may be lost by the next. The thoughts of men may flow into the channels which lead to disaster and barbarism.'

I venture to think, however, that this conclusion is not at variance with the conclusions of biology. Biological science has long given up the conception of evolution as a process free from chance or excluding the exercise of choice; yet reviewing as it attempts to do a period as far exceeding the known history of man as a millennium exceeds a day, science believes it can discern comprehensible developments if the period chosen be long enough. The problem for the political philosopher is whether he can forecast those developments and whether the study of the natural sciences can help him to do so.

Let us try to project ourselves back to the age of the giant Dinosaur or the Pterodactyl of the Jurassic period; could we have imagined that those great creatures would survive only as fossil remains? We do not know exactly what our own ancestors were like in those ages but we do know that they, the earliest mammals, and the Dinosaurs were contemporaneous and sprang from the same common stock. What chance or choice caused that other branch of the family to break off and develop into the Dinosaurs while our ancestors developed by infinitely slow degrees into men is still a matter for speculation, but when first

¹ A History of Europe. H. A. L. Fisher, Vol. I, Preface.

the brothers separated and the cousins grew further apart who could have known—as we believe that we know now—that the extreme and highly specialized development however much more formidable in its own environment was the one less likely to survive in a changing world!

Is it possible that some form of social organism will eventually emerge and survive as the most suitable environment made by man—or through man—for his further evolution?—and if so which of the social organisms that we know will be its parent or parents? May it be that here, too, the extreme manifestations are doomed to extinction? An interesting speculation!

Closing his address ¹ to this Society six years ago your then President, Colonel Seymour Sewell, said:

‘I would on the other hand postulate that man has, or in the very near future will have, rendered himself so independent of his environment that it will no longer be able to affect his physical characters and that if there is to be any further evolution, this must be the result of his own mental processes.’

That statement, I think, excludes the possibility of cataclysm brought about either by the forces of nature or by the abuse of man’s own powers—but leaving that aside, does not Colonel Sewell’s conclusion amount to this, that it is in the social rather than in the individual organism that we must look for evolution in the future?

I do not venture to state this as a theory—I merely put it forward as a speculation. But since the different groups into which mankind is divided can no longer, even if they would, isolate themselves one from another, it would seem possible that if man is to evolve as both a rational and a social being, there must also evolve a social microcosm wherein the basis, the nature and the uses of authority will be recognized universally and rationally both by those who exercise it and by those upon whom it is exercised.

Whether or not there will be any evolution on such lines must remain a matter of belief or lack of belief: should it ever occur it may not be in the time of any descendant of ours whose conceptions of the nature of power we can envisage with accuracy. But let us not fall into the error of assuming that such an evolution must naturally take place.

Once again an analogy from biological studies is of interest. In the biological world the individual organism bears traces of its primæval history and development, of which the significance may be discernible only to the man of science: thus also the mind of man is a complex entity with a long history. It may well be that in the differing political organisms of the world to-day lie differences not to be explained by causes within the

¹ Annual Address to the Asiatic Society of Bengal, 1930-1931.

scope of recorded history: if so, there is no reason to presume that the different races of the world will necessarily react in the same way to the same political, cultural and economic influences. We may well be still at the stage when each may require something distinctive in its political organism to satisfy some deep laid tendency, different in essence and persisting through long periods of cultural or political assimilation only to reassert itself at some later epoch.

In the German a combination of mysticism and docility with irrepressible vigour of race may be an underlying factor in the history of his social and political development. In Italy there is a people with proud memories of empire long disunited and politically impotent—a people whose history shows a strange combination of exuberance of talent and asceticism. When in Western Europe the temporal power of the Roman Emperors remained distinct from the power of the Church was it an accident that the Orthodox Church became the Church of Russia—a Church identified completely with the temporal power—or was there then some tendency to absolutism that still expresses itself to-day?

I would not be so rash as to generalize about India but it is, I think, true to say that in India until recent times the main current of thought was concerned with the development of the individual and the sanctity of his purely social environment using the word 'social' in its narrower sense: it regarded his reactions to mundane events as more important than the events themselves. The social organism was merely a medium in which man had to work out his own salvation—not a plastic medium susceptible of control but a rigid and unalterable one. To such thought the political structure was a mere superimposition and irrelevant so long as the social structure was kept intact. It was, I think, Akbar who first conceived the practical possibility of a unified political, cultural, and possibly even social organism for India as a whole—at about the same time as the first beginnings of national monarchies in Europe put a definite end to the conception of an unified political structure for Europe.

The conception of a socially and politically unified India as a practical possibility and the whole current of political thought that arises from that conception are modern in the extreme and directly attributable to the British connection. We already see, I state it merely as a fact and without any controversial implications, a conscious intellectual movement to sever that connection. Supposing it were severed? Is the tendency for unification so historically strong or so essential for the further evolution of the Indian peoples that it must survive, or is its necessity so demonstrable to reason and is the power of reason so strong as to ensure the easy predominance of such a tendency?

These are reflections suggested by recorded history but if tendencies arising from recorded history so strongly influence

the minds of successive generations may it not follow that the influences of unrecorded history are still extant and in the strictest sense of the word incalculable?

It is only on the assumption that all men are capable of evolving into completely rational beings and that the influence of reason will eventually overcome environment that we can conceive of the emergence and survival of one type of social organism. That assumption may be a conviction but it is no more: but if so be that there is an evolution in the social organism and if one conception of power may help us to understand and control that evolution, there is a need to seek out that conception not merely abstractly or *a priori* but also by the patient study of phenomena.

To those who believe in the possibility of evolution history rolls on like a mighty river ever seeking its way to the sea: it is not a canal cut straight to a clear destination nor does its path lie down a broad valley leading direct to the ocean. It may run over rapids or split into deltas: a stratum of rock or a new impetus, beginning perhaps with a small and insignificant cut, may turn back or divert its course for centuries: parts of it may dry up leaving on its dead banks the ruins of once famous cities.

Man engrossed in contemporary events, stands on its bank, and seeing only the rush and swirl of the eddies or the desolate surface of some disconnected swamp asks himself whether what he surveys is river at all: perhaps it is only an interminable whirlpool or a stagnant marsh, its surface broken now and then by bubbles only to relapse again into quiescence.

Some are content to watch its flow only hoping that it will not break its banks and engulf them in ruin. Others proclaim that they have found the main current, dig a channel here or build an obstruction there to guide or control it, not knowing and perhaps not caring whether they are leading the precious stream against an impenetrable ridge or diverting it into a futile backwater.

The student of recorded history standing on a little eminence traces back its course till soon it disappears into the mists of time—he sees how it has come and speculates how it might have gone had this obstruction been removed or that channel cleared, but he cannot divine what natural obstacles or what caprice of man may guide its course in the future.

To see its course as a whole, to comprehend the forces that drive it on, to envisage the country that it yet has to traverse, to find the main channel and to help it on its journey towards the sea—therein lies a task worthy, I think, of the highest intellects and the deepest learning.

JOHN ANDERSON.

The 15th February, 1937.

OFFICERS AND MEMBERS OF COUNCIL.

ROYAL ASIATIC SOCIETY OF BENGAL, 1937.

*Elected and announced in the Annual Meeting,
15th February, 1937.*

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G.C.I.E.

Vice-Presidents.

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Percy Brown, Esq., A.R.C.A., F.R.A.S.B.

Lt.-Col. N. Barwell, M.C., M.A., Barrister-at-Law.

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F.Z.S., F.R.S.E., F.R.A.S.B.
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Chanda, B.A., F.R.A.S.B.

Medical Secretary:—Bt.-Col. R. N. Chopra, C.I.E., M.A.,
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Library Secretary:—M. Mahfuz-ul Haq, Esq., M.A.

Other Members of Council.

C. C. Calder, Esq., B.Sc., F.L.S.

N. G. Majumdar, Esq., M.A., F.R.A.S.B.

K. C. Mahindra, Esq., B.A. (Cantab.).

The Hon'ble Mr. Justice John Lort-Williams, Kt., K.C.

B. S. Guha, Esq., M.A., Ph.D. (Harvard).

W. D. West, Esq., M.A. (Cantab.).

EXHIBITION ANNUAL MEETING.

LIST OF EXHIBITS SHOWN AFTER THE ANNUAL MEETING OF
THE ROYAL ASIATIC SOCIETY OF BENGAL, ON THE
15TH FEBRUARY, 1937.

1. CHINTAHARAN CHAKRAVARTI.

Illustrated Old Indian Manuscripts and Manuscript Covers.

(1) Aṣṭasāhasrikāprajñāpāramitā (R.A.S.B.—Cat. No. 2)—a Buddhist work copied in the 6th year of Mahīpāla (11th century).

(2) Aṣṭasāhasrikāprajñāpāramitā (R.A.S.B.—Cat. No. 3) copied in N.S. 268 (1148 A.D.).

(3) Aṣṭasāhasrikāprajñāpāramitā (R.A.S.B.—Cat. No. 7) copied in the 18th year of Govindapāla (12th century).

(4) Pañcaraksā (R.A.S.B.—Cat. No. 77)—a Buddhist work copied in Saka 1211 (1289 A.D.).

(5) A Mahāyānasūtra (R.A.S.B.—Cat. No. 39).

(6) A manual of Buddhist rituals (R.A.S.B.—Cat. No. 102) copied in N.S. 693 (1573 A.D.).

(7) A fragment of a work of Buddhist incantations (R.A.S.B.—Cat. No. 46) copied in N.S. 933 (1813 A.D.).

(8) Bhaktāmarastotra of the Jains (R.A.S.B.—No. 1545) of which each verse is illustrated with a full-page illustration.

(9) Pictures of the twenty-four Jain Tīrthaṅkaras (R.A.S.B. No. 1544).

(10) Yantrendraprakāśa of Maheśvara containing illustrations of the constellations (Indian Museum MS. No. 3733).

(11) Sarvadarśanasamgraha (Indian Museum MS. No. 3735-6)—a book of omens containing illustrations of various objects.

(12) Painted covers of manuscripts belonging to the Vaidya Sāhitya Pariṣat illustrating incidents in the life of Lord Kṛṣṇa, e.g., sucking the breast of mother Yaśodā, playing on the flute with friends, pacifying Rādhā, female attendants waiting on Rādhā and Kṛṣṇa.

2. B. S. GUHA.

Wooden Effigies of the Red Kaffirs of the Hindukush Mountains.

Two wooden effigies brought by Dr. Guha in 1929 from the village of Kunisht in the Rampur valley (Chitral). These were erected in memory of a distinguished Red Kaffir warrior and a notable lady by the Red Kaffirs of Kunisht.

3. ARCHÆOLOGICAL SURVEY OF INDIA.

Painted pottery from Nal, Baluchistan (c. 3000 B.C.).

These vases come from the mound of Sohr Damb near the village of Nal, situated in the Jhalawan District of the Kalat State of Baluchistan. All the wares are wheel-made. The clay is usually fine, mostly light red in colour and well mixed, and the bulk of the pottery is pale or dark buff, straw-coloured, or of greenish hue. The

designs are applied in brown or sepia or black, and filled in after firing with blue, green, red, yellow or white, some of its linear patterns recalling those of the Susa I pottery. Most of these polychrome vases were found deposited in prehistoric burials and excavated by the Archaeological Department. After discovery they were sent to the McMahon Museum, Quetta, from where they have been transferred to the Indian Museum, Calcutta, after the recent earthquake.

4. GEOLOGICAL SURVEY OF INDIA.

I. *The ferro-alloys.*

Certain metals—manganese, nickel, chromium, tungsten, molybdenum, vanadium and, quite recently, beryllium—are used to form special alloys with steel, and for this reason are known as the ferro-alloys. Each of these gives to steel special properties, so that they are almost indispensable in modern metallurgical and engineering practice. Except for manganese, chromium and perhaps nickel, the total amount of these metals available throughout the earth's crust is small, and within a century there is little doubt that most of our resources will have been entirely depleted. However, some of them are more or less interchangeable so far as certain properties are concerned, and research is even now demonstrating the possibility of using more common elements, particularly the alkalis as well as calcium and magnesium, as substitutes.

The specimens exhibited show the principal ores of the ferro-alloys.

Manganese.—The ores of manganese are mainly psilomelane (H_4MnO_5) and pyrolusite (MnO_2), but there are numerous other manganese minerals. At the present day the principal producing countries are Russia, with an annual out-turn of nearly 2 million tons, India with about 700 thousand tons, and the Gold Coast with 500 thousand tons. In India manganese-ore is obtained mainly from the Central Provinces and Singhbhum.

Manganese has a two-fold use in metallurgy. Low grade ore, high in iron, is used in cast-iron smelting as a deoxidiser. Alloyed with steel it imparts toughness and resistance to abrasion to the metal. Manganese steels are particularly used for wheels, axles, tyres, springs and armour piercing projectiles.

Nickel.—The nickel ores consist of several nickel sulphide minerals, chief of which are pentlandite, millerite, gersdorffite and smaltite. Over 90 per cent. of the world's supply of nickel comes from Sudbury, in northern Ontario, Canada, a certain amount comes from New Caledonia, and a little is obtained as a bye-product from the treatment of the lead-zinc-copper ores of Bawdwin, Burma. Recently a new occurrence has been found in Finland.

The importance of nickel as a ferro-alloy is, perhaps, not so great as formerly, most of it being now used alloyed with copper (monel metal) or in nickel plating. Nickel increases the tensile strength of steel and also its resistance to shock. The chromium-steel alloy '18-8' contains 8 per cent. of nickel.

Chromium.—The sole ore for chromium is chromite (FeCr_2O_4). The principal producing countries are Southern Rhodesia, Transvaal, Turkey, Russia, Cuba, New Caledonia and India.

In India chromite is obtained from Baluchistan, Mysore and Singhbhum.

Low grade chromite, 35–47 per cent. Cr_2O_3 , is used as a refractory material for lining furnaces. High grade chromite, 48–54 per cent. Cr_2O_3 , is used for the manufacture of ferro-chrome which is added directly to the steel melt in making special steels. These steels, especially with some nickel also present, have remarkable anti-corrosive properties.

Tungsten.—There are two ores of tungsten: wolfram, $(\text{FeMn})\text{WO}_4$, and scheelite, CaWO_4 , the former being much the more common. Most of the world's supply comes from China, but Burma is responsible for a considerable production. Before the war all tungsten ores had to be sent to Germany for treatment. At the commencement of the war Germany had six months' supplies whilst we had to work out the method of treating the ore. Germany attempted to obtain molybdenite from Norway as a substitute, but by paying a high rate the Allies blocked even these supplies from Germany.

The effect of tungsten on steel is an increase of hardness and strength. Certain special cutting tools are of tungsten steel. Tungsten carbide is manufactured into extremely hard cutting tools.

Molybdenum.—The sole ore for molybdenum is molybdenite (MoS_2). Almost the whole of the world's supply now comes from two mines, the Climax mine in Colorado and the Copper Creek mine in Arizona. A little is occasionally produced in Norway and Australia, and should the necessity arise, some could be obtained from Burma. Molybdenum can take the place of tungsten in steels to some extent, as it imparts similar properties. It assists resistance to corrosion at high temperatures.

Vanadium.—There are quite a number of vanadium-bearing minerals. The principal production is from Southern Rhodesia, South-west Africa and Peru. The production is very irregular as the demand for steel purposes is small. Recently, in India, certain iron-ores containing up to 5 per cent. of vanadium have been found, in Singhbhum and Mayurbhanj.

Vanadium steels are extremely tough and are used for high speed purposes. Their use would undoubtedly increase if obtainable at a lower cost.

Beryllium.—There is only one workable ore-mineral for beryllium-beryl. So far India has been the biggest producer of this mineral with 799 tons between 1932 and 1935 from Ajmer, but recent information indicates that larger quantities will shortly be mined in U.S.A. The use of beryllium in certain alloys have only recently become known. Owing to its rarity, the metal is very costly.

Beryllium is said to increase the tensile strength of steel enormously; certain alloys have been made with a tensile strength of 250,000 lbs. per square inch.

11. *Series of specimens and diagrams illustrating the evolution of cephalopods.*

The cephalopods, a group of marine invertebrates, illustrate in a graphic manner two interesting phases in their evolutionary history. In the earlier PROGRESSIVE phase the simple straight conical forms gradually assume, through various intermediate stages, a highly coiled form. In the later or RETROGRESSIVE phase (i.e. phase of senility) the process of coiling is reversed so that the geologically later genera assume forms that are characteristic of the earlier genera.

(1) The earlier cephalopods are simple, nearly straight forms as in *Orthoceras* and *Bactrites*. These are designated ORTHOCONES in the Nautiloids and BACTRICONES in the ammonoids.

(2) A later stage in coiling is represented in *Cyrtoceras*, in which the cone becomes slightly curved and constitutes the CYRTOCONE. This stage has not been found in the ammonoids.

(3) The slightly coiled *Cyrtoceras* stage is superseded by a more coiled form (the individual coils still remaining separate) and is found in *Gyroceras* and *Mimoceras*. These represent the GYROCONES and MIMACONES respectively.

(4) The tendency to coil persists to such an extent that gradually each successive coil overlaps the other, till finally the last whorl completely covers all the previous ones, as, for example, in *Nautilus* and many ammonoid genera. These constitute the NAUTILICONES and AMMONITICONES respectively.

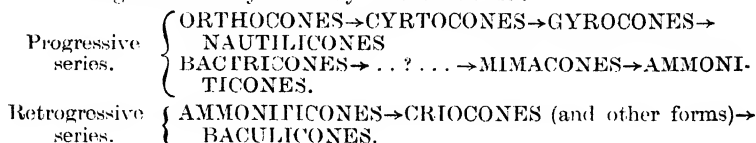
After this stage begins a tendency to uncoil and is best illustrated in the ammonoids, the majority of the nautiloids having become extinct.

(5) The uncoiling of Ammoniticones leads to the stage represented in such genera as *Spiroceras* and *Crioceras* and may be called the CRIOCONE. It represents a stage corresponding to the GYROCONES and MIMACONES of the progressive series.

(6) Other stages in uncoiling are represented by the genera *Scaphites*, *Ancylloceras* and *Hamites*. No particular name has been given to these.

(7) The final stage is a simple, almost straight cone, as in *Baculites*, and may be called the BACULICONE. This corresponds to the earlier ORTHOCONES or BACTRICONES of the nautiloids and the ammonoids respectively.

Diagrammatically this may be shown thus :



III. Specimens and photographs of the oldest fossils from India.

These specimens are the oldest fossils so far discovered in India. They are small, irregularly circular, lens shaped bodies with a covering of carbonaceous film. They have been identified as plants by some experts and as animals by others. They have even been regarded as of inorganic origin.

IV. Micro-structures of fossils.

The specimens, thin sections and photographs illustrate the internal and external structures of certain small organisms—the Foraminifera. The Foraminifera are interesting because they show two entirely different types of individuals in the same species, each type reproducing the other.

The larger discoidal forms give rise to the small conical forms which in turn reproduce the discoidal forms. The same process is then repeated.

V. Casts of the skulls of fossil Man.

Rhodesian Man, found in Northern Rhodesia. It has features which seem to indicate that this was nearer to the Chimpanzee and Gorilla than was Neanderthal Man.

Pittdown Man, found in Sussex, England, possesses a skull almost as well developed as that of modern Man, but has a jaw which is like that of an Anthropoid ape.

Peking Man.—Five more complete skulls of this species have very recently been found in China. It probably occupies an intermediate position between *Pithecanthropus* and Neanderthal Man.

5. THE GENERAL SECRETARY.

(1) *The Society's publications of 1936.*

- (a) Bibliotheca Indica.
- (b) Journal.
- (c) Proceedings, Indian Science Congress.

(2) *Some recent publications by Members of the Society.*

- (a) Bimala Churn Law : Śrāvasti in Indian Literature. Delhi, 1935.
 - (b) Chintaharan Chakravarti : A Descriptive Catalogue of the Sanskrit Manuscripts in the Vangiya Sahitya Parishat. Calcutta, 1935.
 - (c) Ramaprasad Chanda : Medieval Indian Sculpture in the British Museum. London, 1936.
 - (d) R. N. Chopra : A Hand-book of Tropical Therapeutics. Calcutta, 1936.
 - (e) S. M. Jaffar : Education in Muslim India, Peshawar City, 1936.
 - (f) S. K. Bhuyan : Tungkhungia Barunji. Calcutta, 1933.
 - (g) B. Prasad : Animal Remains from Harappa. Delhi, 1936.
 - (h) A. G. Shirreff : Hindi Folk-songs. Allahabad, 1936.
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ANNUAL REPORT FOR 1936.

The Council of the Royal Asiatic Society of Bengal has the honour to submit the following report on the state of the Society's affairs during the year ending the 31st December, 1936.

1. Royal Title.

During the year His Majesty the King Emperor has been graciously pleased to grant permission to the Society to use the title 'ROYAL' before its name, and the Society therefore will henceforth be known as the 'ROYAL ASIATIC SOCIETY OF BENGAL'.

2. Ordinary Members.

Gains and losses.—These were as follows during the year :—

<i>Gains.</i>			<i>Losses.</i>		
Elections carried forward	..	7	Elections carried over	..	13
New elections	..	38	Applications withdrawn	..	3
			Elections lapsed	..	3
			Deaths	..	6
			Resignations	..	20
			Rule 38	..	3
			Rule 40	..	7
TOTAL	..	45	TOTAL	..	55

Initial total 425 ; net loss 10 ; final total 415.

Rule 38.—This Rule, dealing with members whose subscriptions are in arrears, was strictly applied and the names of 3 Members were subsequently removed from the roll for this cause.

Membership List.—The customary detailed cross-check of the membership lists with the membership card index was made at the end of the year.

Non-resident Members.—Their total at the end of the year was 106, leaving more than ever room for substantial expansion.

Life-members.—The total of our Life-members has decreased by one and now stands at 55. Three were lost by death ; and two Ordinary Members compounded during the year.

Deaths.—This year the loss to the Society by death has been less heavy than the year before. Amongst the distinguished and especially valued members lost to us, whose memory will be cherished, and for whose departure the Society is the poorer, the following may be mentioned :—

Sir R. N. Mookerjee (Life-member, 1898 and Honorary Fellow, 1929).

Rev. Sir N. D. Beatson-Bell (Life-member, 1895).

Dr. A. C. Woolner (Life-member, 1906 and Ordinary Fellow, 1927).

Lt.-Col. R. Knowles (Ordinary Member, 1920 and Ordinary Fellow, 1927).

3. Associate Members.

During 1936 no new Associate Members were elected, and none amongst those on the roll were lost.

The present number stands at 5 ; statutory maximum 15.

4. Special Anniversary Honorary Members.

Our eleven Special Anniversary Honorary Members have remained with us.

5. Institutional Members.

During the year the following new institutions were admitted to this class of membership :—

The Principal, Islamia College, Peshawar.

The Principal, Patna College, Patna.

The President, Forest Research Institute, Dehra Dun.

Their total number is 10.

6. Ordinary Fellows.

At the Annual Meeting held on the 3rd February, 1936, the following Members were elected Ordinary Fellows :—

Dr. S. K. Chatterji.

Dr. A. M. Heron.

N. G. Majumdar.

Nawab Habib-ur-Rahman Shirwani.

We lost through death the following two Ordinary Fellows :—

Lt.-Col. R. Knowles (1927).

Dr. A. C. Woolner (1927).

At the end of 1936 the number of Ordinary Fellows was 46 ; statutory maximum 50.

7. Honorary Fellows.

During the year no scholars were newly elected Honorary Fellows, and the following three distinguished Honorary Fellows were lost by death :—

Dr. C. Snouck Hurgronje (1927).

Sir Rajendra Nath Mookerjee (1929).

Dr. Charles J. H. Nicolle (1929).

Their number at the end of the year was 21 ; statutory maximum 30.

8. Obituary.

During the year the Society received to its great regret news of the death of the following distinguished relations :—

Major H. Brown (An Ordinary Member, from 1924 to 1930).

Mr. S. N. Mallik, C.I.E. (An Ordinary Member, from 1928 to 1930).

Sir Alexander Stow (An Ordinary Member, from 1923 to 1934).

9. Condolences.

The Council expressed condolences to the relatives of the following distinguished personality deceased during the year :—

Sir R. N. Mookerjee, K.C.I.E., K.C.V.O., an ex-President, Life-member and Honorary Fellow of the Society.

10. Council.

The Council met 11 times during the year. The attendance averaged 12 of the 20 component members.

The following resolutions of thanks were passed by the Council :—

To His Majesty the King Emperor for granting permission to use the title 'Royal' by the Society.

To Mr. D. C. Ghose for presenting to the Society a portrait of the late Sir C. C. Ghose.

To the retiring Members of Council and specially to the President, Sir L. L. Fermor, for the way in which they had served the true interests of the Society during the period of their Council Membership.

To Mr. M. N. Mukherjee, B.E., for supervising and for giving valuable advices in connection with the repairs to the roof of the Society's building.

11. Office Bearers.

The changes in the Council during the year were as follows :—

Sir U. N. Brahmachari, Acting General Secretary, *vice* Mr. Johan van Manen, absent, from 16-5-36 to 16-11-36.

Mr. Percy Brown, Acting Library Secretary, *cicé* Dr. A. M. Heron, absent, from 1-8-36 to 27-11-36.

Mr. Johan van Manen, Acting Honorary Treasurer, *vice* Dr. S. L. Hora, absent, from 24-1-36 to 7-2-36 ; from 16-11-36 to 24-11-36 and from 16-12-36 to 31-12-36.

Absences other than those mentioned above were :—

H.E. Sir John Anderson, absent from 8-4-36 to 1-8-36 and from 1-9-36 to 3-11-36.

Sir David Ezra, absent from 16-4-36 to 1-11-36.

Sir B. L. Mitter, absent from 15-4-36 to 14-8-36.

Lt.-Col. R. Knowles, died on 3-8-36.

Dr. B. Prashad, absent from 20-5-36 to 1-7-36.

Dr. J. N. Mukherjee, absent from 19-10-36 to 14-11-36.

Dr. M. H. Hosain, absent from 25-9-36 to 25-10-36.

R.B. R. Chanda, absent from 1-4-36 to 10-5-36.

Bt.-Col. R. N. Chopra, absent from 15-4-36 to 15-8-36.

Mr. M. Mahfuz-ul Haq, absent from 5-6-36 to 1-7-36.

Mr. C. C. Calder, absent from 10-5-36 to 1-11-36.

Mr. K. C. Mahindra, absent from 18-4-36 to 1-11-36.

12. Committees of Council.

The standing Committees of Council during the year, namely, the Finance, Publication, and Library Committees, met monthly.

During the year a sub-committee consisting of the Philological Secretary, the Joint Philological Secretary, the General Secretary and Lt.-Col. N. Barwell, was appointed for the revision of the regulations for the lending of manuscripts.

13. Finance Committee.

The Finance Committee continued during the year to meet on dates different from, and a few days prior to, those of the Council Meetings.

A Special Meeting to frame the budget for the next year was held in December.

14. Office.

Staff.—Towards the close of the year Babu Probodh Chandra Deb, Despatching clerk of the Society, who had been ill, died and Mr. A. Michael was placed in charge of the despatching work.

Subordinate Staff.—In the subordinate staff the usual minor changes took place, which do not call for comment.

Correspondence.—This year the number of outgoing letters was 1,751 and that of incoming letters 2,859.

Files.—During the year intermittent work was continued with regard to our files, old and new, but not much real progress can be reported.

Stock-room.—Labelling, bundling, and registration of the contents of the stock-room were kept up-to-date during the year for new publications. The stock-books for new accessions and for sales were kept up.

Distribution.—No change was made in the mode of distribution of our periodicals and notices. A better system for the distribution of the free copies of the *Bibliotheca Indica* should be devised.

Addresses.—Printed address labels remained in use and the system of constant revision and addition which has been adopted enables us to keep the printed addresses up-to-date, month by month.

Card Register.—The card registers of the Society's membership and of that of the Indian Science Congress were kept up-to-date and checked at the close of the year.

Circulars and Forms.—The number of these printed during the year was 74. About Rs.1,042 were expended under this head.

15. Rules and Regulations.

During the year no changes were made in the Rules and Regulations of the Society.

16. Indian Science Congress.

Twenty-third Session.—The Twenty-third Annual Meeting of the Indian Science Congress was held in Indore, from January 2nd to January 8th, 1936, under the patronage of His Highness Maharajadhiraj Raj Rajeshwar Sawai Shree Yeshwant Rao Holkar Bahadur, G.C.I.E., Maharaja of Indore.

President.—Rai Sir U. N. Brahmachari Bahadur, Kt., M.A., M.D., Ph.D., F.S.M.F., F.A.S.B., F.N.I., was President of the Congress.

Proceedings.—The Proceedings of the Congress were published during the first week of October. The publication contained 674 pages and 3 plates which was 42 pages of letter-press and 3 plates more than the year before. The number of abstracts sent in for reading to the Congress numbered this year 570 as against 776 last year.

Administration.—During the latter months of the year the usual administrative work for the Congress in connection with the next session (Twenty-fourth Congress), to be held in Hyderabad, Deccan, was performed by the Society's office, which also attended to the general administration of the Congress when this was not in session. This year the burden of work thrown on the Society's office was as heavy as usual.

Programme and Abstracts.—As in the previous years the programme of the meeting and the abstracts were sent, as far as practicable, by post to all members who had applied for membership before the date of their publication. This year this date was again late, the 17th December.

Finance.—The Congress finances remained separate from those of the Society.

Secretaries.—The General Secretaries to the Congress were Dr. J. N. Mukherjee and Mr. W. D. West; and the Managing Secretary was Mr. Johan van Manen in his quality of General Secretary of the Society.

17. Indian Museum.

The Society's representative on the Board of Trustees of the Indian Museum, under the Indian Museum Act, X of 1910, continued to be Rai Sir Upendra Nath Brahmachari Bahadur, Kt.,

who was re-appointed as such for a further period of three years.

18. Kamala Lectureship.

The Society's nominee to serve on the Election Committee of the Kamala Lectureship, administered by the Calcutta University, remained the same, Rai Sir Upendra Nath Brahmachari Bahadur, Kt.

19. National Institute of Sciences of India.

The Society's representatives to serve on the Council of the National Institute of Sciences of India remained the same, Bt.-Col. R. N. Chopra and Mr. C. C. Calder.

20. Deputations.

During the year the Society received no invitations from any learned institutes to send representatives at special functions.

21. Honours.

Amongst the Honours conferred during the year several were bestowed on members of the Society. Mr. Justice John Lort-Williams, Mr. B. C. Burt, Mr. G. R. Campbell received the honour of Knighthood. Sir N. N. Sircar was made a K.C.S.I. Maharaja Sir P. C. Tagore a K.C.I.E. Mr. Ghulam Yazdani a member of the O.B.E.

22. Congratulations.

The Society sent its cordial congratulations to the following :—

To Dr. B. Sahni, at the occasion of his being elected a Fellow of the Royal Society.

To Dr. H. E. Stapleton, at the occasion of his receiving the degree of Doctor of Literature from the University of Oxford.

Congratulations were also sent to several of the above recipients of Civic Honours.

23. Visits.

An appreciable number of distinguished visitors came to the Society during the year. Amongst them were scholars from Japan, France, Hungary, Hawai, Poland, England and the United States of America.

24. Social Functions.

A social function was held in the rooms of the Society on Friday, the 14th August, 1936, when H.E. the Governor of Bengal unveiled the portrait of the late Sir C. C. Ghose, an ex-President of the Society.

The Society also continued the practice of providing light refreshments to the Members and visitors present before the Ordinary Monthly Meetings.

25. Elliott Prize for Scientific Research.

The annual prize for 1935 for research in Geology and Biology (including Pathology and Physiology), was, in the Annual Meeting of 1936, awarded to Mr. Kalipada Biswas.

The prize offered for the year 1936 was for Mathematics. No paper was received to compete for this prize.

The prize for next year, 1937, will be for research in Chemistry.

26. Barclay Memorial Medal.

The (biennial) award of the Barclay Memorial Medal for 1935 was announced in the Annual Meeting of 1936. The medal was bestowed on Dr. Birbal Sahni.

The next award will be announced in the Annual Meeting of 1938.

27. Sir William Jones Memorial Medal.

The next (triennial) award of the Sir William Jones Memorial Medal, for 1937, for Asiatic researches in Philosophy, Literature and History will be announced in the Annual Meeting of 1938.

28. Annandale Memorial Medal.

The (triennial) award, for important contributions to the study of Anthropology in Asia, will be announced in the Annual Meeting in February, 1937.

29. Joy Gobind Law Memorial Medal.

The (triennial) award of the medal for conspicuously important work on Zoology in Asia, for 1935, was made to Prof. Lew Semenowitch Berg, Chief of the Bureau of Applied Ichthyology and Professor of Geography, State University, Leningrad.

The next award will be announced in the Annual Meeting of 1939.

30. Paul Johannes Brühl Memorial Medal.

The next (triennial) award for important contributions to the study for Asiatic Botany will be announced in the Annual Meeting of 1938.

31. Calcutta Indian Science Congress Prize.

The next award of the prize is to be made in connection with the next Session of the Congress to be held in Calcutta.

32. Pramatha Nath Bose Memorial Medal.

Rules for the triennial award having been framed and passed by Council, the Council will now determine the first year of bestowal.

33. Society's Premises and Property.

A sum of Rs.2,000 was set aside during the year to be credited to the Building Repairs Fund.

Necessary repairs to the roof were effected during the year.

During the year also, a complete re-wiring of our premises was effected at a cost of about Rs.1,200.

The various desiderata and problems existing under the heading Premises and Property have been mentioned in the Annual Reports of the last few years and have to be kept in mind until realization.

34. Accommodation.

Old problems to be carried over as still needing attention are : the provision of a set of small rooms for various uses, and the shelving of the stock-rooms as well as extension of shelving for the Library. A new problem is consequent on the receipt of 12,000 Sanskrit manuscripts made over to the Society as a permanent loan by the Government of India.

35. Artistic and Historical Possessions.

Mr. D. C. Ghose presented to the Society a portrait of the late Sir C. C. Ghose, an ex-President of the Society. This striking work of art, painted by Mr. Atul Bose, has been gratefully accepted by the Society and has been hung in the Society's North Landing.

36. Presentations, Donations, and Legacies.

Except for the presentations mentioned under the previous heading and those to be mentioned under the next, no presentations were received during the year.

37. Library.

Permanent Library Endowment Fund.—The fund received no further donation during the year. The total invested capital remained (face value) Rs.14,000, in $3\frac{1}{2}$ per cent. Government paper. The accumulated interest will permit the purchase of one further paper to the face value of Rs.1,000 during next year.

Accessions.—The accessions to the library during the year, exclusive of about 200 periodicals received through exchange or otherwise, numbered 237 volumes, out of which 127 were purchased and 110 were acquired by presentation.

Binding.—During the year 481 units, including books, pamphlets, and periodicals, were bound at a cost of Rs.613, out of a total budget allowance of Rs.600 sanctioned for the purpose.

Purchases.—The allocation for the purchase of books for the year was Rs.2,500, but actually an amount of Rs.2,197 was spent.

Shelving.—Installation of special steel shelving for manuscripts and books in the western section remains to be effected, and provision has also to be made for further steel shelving for the current accessions of periodical literature. Our available shelving space for printed books is also rapidly coming to an end.

38. Finance.

(1) Appendix III contains the usual statements showing our accounts for 1936. No change has been made in the form of their presentation since the previous year.

(2) One statement, still carried over, is :

Statement No. 17. International Catalogue for Scientific Literature, London.

(3) The other statements are presented as in the previous year.

(4) The fund accounts again show their invested assets written down to the market values as at the end of the year, and Investment Account No. 25 shows the allocation of invested paper to each fund specifically, whilst both market and face values of the investments are shown in it.

(5) Statement No. 27 shows the Balance Sheet of the Society and the different funds administered by and through it.

(6) The funds belonging to, or administered by, the Society may be classified as follows :—

(a) General Fund.

(i) Permanent Reserve.

(ii) Working Balance.

(b) Specific Funds belonging to the Society.

(c) Funds administered by the Society.

At the end of the year, the position of these funds, as compared with their position at the end of 1935 was as follows :—

	Face Value.	Market Value.	Face Value.	Market Value.
	31st Dec., 1935.	31st Dec., 1935.	31st Dec., 1936.	31st Dec., 1936.
	Rs.	Rs.	Rs.	Rs.
1. General Fund ..	2,88,600	2,75,400	2,78,700	2,91,000
(a) Permanent Reserve	2,52,000	2,40,900	2,53,200	2,65,500
(b) Working Balance	36,600	34,500	25,500	25,500
2. Specific Funds belonging to the Society ..	59,000	58,500	80,000	80,000
3. Funds administered by the Society ..	39,500	38,500	27,600	27,600
	3,87,100	3,72,400	3,86,300	3,98,600

(7) During the year Rs.832 were received through admission fees. Two ordinary members compounded their subscriptions to a total of Rs.388. Two new Institutional members, one with effect from 1st January, 1937, were admitted. The fees of Rs.100, together with the above amounts less a sum of Rs.30-9 cash advance which was brought forward from 1935, under this head aggregating to Rs.1,289-7 was transferred to the Permanent Reserve in the usual manner by conversion at the market rates as on 31st December, 1936, of Government $3\frac{1}{2}\%$ Paper to the Face Value of Rs.1,200 belonging to the Temporary Reserve of the working balance, whilst a cash balance of Rs.78-7 is being carried over to the ensuing year, for adjustment under this head.

(8) The Government of Bengal maintained the 20% cut in all grants made by them to the Society during the year.

The Society received the following grants from the above Government :

	For	Rs.	Statement.
Journals	1,600	1
O.P. Fund No. 1	7,200	2
O.P. Fund No. 2 (for 1935-36 and 36-37)	4,800	3
Sanskrit MSS. Fund	2,880	4
Do. do.	2,560	4
		19,040	

(9) The income derived from advertising during the year amounted to Rs.9,600.

(10) The temporary investments of funds in Fixed Deposit and Savings Bank are shown in Statement Nos. 22, 23 and 24.

(11) Statement No. 20 gives an account of the amounts due to and by the Society for membership subscriptions, sales of publications and contingent charges.

(12) The Government Securities shown in Statement No. 25 are held in safe custody by the Imperial Bank, Park Street Branch. During the year, there was a substantial appreciation of the Securities amounting to Rs.15,623 increasing to that extent the book assets of the Society.

(13) Municipal assessment. For the fourth time in succession the Corporation has enhanced the Assessment on the Society's premises.

The enormous increase demanded has been reduced through the intervention of a taxation expert engaged by the Society. The municipal taxation is becoming a menace to the Society's life.

(14) The budget estimates for 1936 and the actuals for the year were as follows :—

Estimates.			Receipts.	Expenditure.
			Rs.	Rs.
Ordinary	..	..	54,500	54,500
Extraordinary	..	..	1,000	1,000
TOTAL.			55,500	55,500
Actuals.				
Ordinary	..	..	52,368	52,152
Extraordinary	..	..	1,270	1,270
TOTAL			53,638	53,422

The ordinary income was about Rs.2,132 less than estimated. On the expenditure side about Rs.2,348 was expended less than the estimate.

(15) The year's working shows an increase in the net balance to the extent of Rs.26,132 as compared to that of last year, taking into account the appreciation of our investments which amounted to Rs.15,623.

(16) The budget estimates for probable expenditure have as usual been framed to meet demands under various heads based on vigorous activity in all departments of the Society's work.

The receipts have been conservatively estimated.

BUDGET ESTIMATES FOR 1937.

Ordinary Receipts.

	1936 Estimate.	1936 Actuals.	Budget Estimates for 1937
	Rs.	Rs.	Rs.
Interest on Investments and Deposits {	10,000	10,011	10,000
	700	781	700
Advertising	9,600	9,600	9,600
Annual Grant	1,600	1,600	1,600
Donation .. .. .	....	....	....
Miscellaneous	300	233	300
Members' Subscriptions	10,000	9,313	9,500
Publications, Sales and Subscriptions	5,000	3,930	4,000
Proportionate Share of Funds ..	7,000	7,000	7,000
Indian Science Congress Contribution	1,000	600	600
Rent	9,300	9,300	9,300
TOTAL ..	54,500	52,368	52,600

Ordinary Expenditure.

	Rs.	Rs.	Rs.
Salaries and Allowances	31,500	31,088	31,500
Commission	350	240	300
Stationery	500	304	400
Fan, Light and Telephone	800	770	800
Taxes	2,250	2,328	2,350
Postage	1,500	1,236	1,400
Freight .. .. .	....	....	....
Contingencies	800	733	750
Petty Repairs	100	50	50
Insurance	500	500	500
Menials' Clothing	200	163	100
Office Furniture	450	35	200
Building Repairs	2,000	2,000	2,000
Provident Fund Share	700	685	700
Audit Fee	250	250	250
Books, Library	2,500	2,197	2,500
„ (Special Grant) .. .. .	....	....	....
Binding, Library	600	614	600
Journal and Memoirs	6,000	4,567	6,000
Printing, Circular	800	1,042	1,000
Honorarium to General Secretary ..	....	2,500	....
Bonus to R.A.S.B. Staff for Congress work .. .. .	....	150	....
Permanent Reserve	1,500	....	....
Replacement of fans	1,200	....	1,200
Legal Fees .. .. .	....	700	....
TOTAL ..	54,500	52,152	52,600

Extraordinary Receipts.

	1936 Estimate.	1936 Actuals.	Budget Estimates for 1937.
	Rs.	Rs.	Rs.
By Fees			
by Admission Fees	650	832	650
by Compounding Fees	300	388	300
by Institutional Membership Registration Fees	50	50	50
TOTAL ..	1,000	1,270	1,000

Extraordinary Expenditure.

	Rs.	Rs.	Rs.
To Permanent Reserve			
by Admission Fees	650	832	650
by Compounding Fees	300	388	300
by Institutional Membership Registration Fees	50	50	50
TOTAL ..	1,000	1,270	1,000

39. Publications.

Journal.—Of the *Journal*, Volume I for 1935, two numbers, consisting of 278 pages and 3 plates to close the volume, and Volume II for 1936, three numbers, consisting of 224 pages and 9 plates were issued. The title-pages and index for Volume I were also published.

Of the *Journal*, Old Series, Volume LXXV, set aside for the 'Flora of the Malayan Peninsula', Part V, consisting of 78 pages was issued to complete the volume. The title-pages for this volume were also published.

In all 580 pages and 12 plates were published during the year.

Indian Science Congress.—The *Proceedings* of the 23rd Indian Science Congress, consisting of 674 pages and 3 plates, were published during the year.

Sales.—A sum of Rs.3,930 was realized, being Rs.1,070 below the budget estimate.

Expenditure.—The expenditure on the *Journal* was about Rs.4,275.

Advance Proceedings.—Four issues were published during the year.

Year-Book.—The *Year-Book* for 1935 is practically complete in print and will be issued early in the present year.

40. The Baptist Mission Press.

Under the capable superintendence of Mr. P. Knight the Baptist Mission Press continued to act as our chief printers and again gave invaluable assistance and maintained closest co-operation.

41. Agencies.

Our European and Indian Agents remained the same throughout the year. An extension of the list for Asiatic countries is desirable.

42. Exchange of Publications.

During the year, the following applications for exchanges with the Society's publications were considered by the Council, with the decisions as noted against them :—

<i>Publications of :</i>	<i>To be exchanged with :</i>
Toyo Bunko, Tokyo, Japan	.. <i>Journal</i> (Science and Letters).
Trivandrum Public Library	.. Sanskrit publications.

43. Meetings.

The Ordinary Monthly Meetings of the Society were held regularly every month, with the exception of August and the recess month of October. The recorded average attendance was 16 members and 3 visitors. The maximum attendance was in January with 26 members and 8 visitors.

Seven meetings of the Medical Section were held during the year.

44. Exhibits.

In the Ordinary Monthly Meetings a number of exhibits were shown and commented upon by the exhibitors. The following may be mentioned :—

M. Mahfuz-ul Haq : A note on a rare MS. of al-Aghrād-al Tibbiya.
J. N. Mukherjee : A brass utensil pierced by hailstone on the 8th March, 1936.

Maharaja Sir P. C. Tagore : Panel representing Sir William Jones translating Shakuntala.

Sunder Lal Hora : Manuscript drawings of Indian fish and other animals recently acquired by the Society.

Baini Prashad : The Rufous-necked Hornbill ; Kabui Naga Cloths.
N. G. Majumdar : A terracotta toy-cart in the Indian Museum.

Chintaharan Chakravarti : A shorter version of Kaulavaliniraya ;
Newly acquired MSS. on the cult of Kubjika ; Little known works of two celebrated Tantric Writers.

Percy Brown : A metal Figurine of a Dancer.

Ramaprasad Chanda : Three small brass images from the Chittagong District.

Suniti Kumar Chatterji : An old Hindu Painting on cloth from the Island of Bali ; A set of old Oriya Playing cards.

Johan van Manen : A recent detailed map of Abyssinia ; A pre-historic iron implement from Malacca.

M. Hidayat Hosain : Kharidat al-Qasr ; A Persian stencilled wall-hanging picture said to represent 'Umar Khayyām.

45. Communications.

Apart from papers submitted both for reading and subsequent publication, a number of communications, not intended for subsequent publication, were made from time to time in the Ordinary Monthly Meetings.

Amongst such communications made during the year the following may be mentioned :—

N. Barwell : Influence of Oriental Motifs upon book-bindings in Europe from the 15th to the 18th century.

Johan van Manen : The recent descriptions of Minya Gonkar.

46. General Lectures.

During the year no General Lectures were given.

47. Philology.

Eleven papers were read during the year to be published later.

Five papers read in the previous years were published during the year.

Three papers were read and also published during the year.

48. Natural History : Biology.

Two papers read in the previous year were published during the year.

Two papers were read during the year to be published later.

49. Natural History : Physical Science.

No papers falling under this heading were either communicated to or published by the Society during the year.

50. Anthropology.

Six papers read in the previous years were published during the year.

One paper was read during the year to be published later.

51. Medical Section.

During the year seven meetings of the Medical Section were held, as detailed below :—

- January. Speaker : Bt.-Col. R. N. Chopra.
Subject : Concentration of atebirin in the circulating blood.
- Speaker : R. N. Chaudhury.
Subject : So-called Mystery Disease.
- February. Speaker : A. C. Ukil.
Subject : On Bronchiectasis—its etiology, diagnosis, prognosis and treatment.
- Speaker : K. V. Krishnan.
Subject : The mechanism of hæmolysis in malarial hæmoglobinuria of monkeys.
- March. Speaker : L. E. Napier.
Subject : On the anemias commonly met with in Calcutta.
- September. Speaker : R. B. Lal.
Subject : The use of the Entoray Machine as an anti-mosquito measure.
- Speaker : K. V. Krishnan.
Subject : Synopsis of laboratory studies on the 'Entoray' Lamp.
- October. Speaker : B. M. Das.
Subject : On a case of Agranulocytosis.
- Speaker : H. E. C. Wilson.
Subject : Nutritional Survey of School Boys in Calcutta and the Punjab by means of clinical observations, A.C.H. Index of Nutrition, and other measurements.
- November. Speaker : R. W. Linton.
Subject : Some aspects of variation in the Vibrios.
- Speaker : P. A. Maplestone.
Subject : On the successful use of cod-liver oil in an intractable skin condition.
- December. Speaker : D. N. Ray.
Subject : Maggot treatment in surgical therapy.
- Speakers : L. E. Napier and R. N. Chaudhury.
Subject : A Hospital Case Report.
- Speaker : B. Mukherji.
Subject : Treatment of cyanide poisoning and the mechanism of action of antidotes.
- Speaker : Sundar Rao.
Subject : On Fouadin in Filariasis.

52. Bibliotheca Indica.

Works published.—Actually published were two issues, Nos. 1526 and 1527, of an aggregate bulk of 10 fascicle units of 96 or 100 pages. The details are given in Appendix II to this report.

Of the above issues one constituted a complete volume, namely :—

1. Ṭabaqāt-i-Akbarī, English translation, Vol. 2.

Indian works continued.—The following works were continued during the year :—

1. Manusmṛti, with the commentary of Medhatithi, Sanskrit.
2. Vaikhānasaśrautasūtram, text, Sanskrit.
3. Saundarānandakāvyaṃ, text, Sanskrit (Second and revised edition).
4. Ātmatattvaviveka. text, Sanskrit.

Islamic works continued.—In the Islamic Series work was continued on two works, namely :—

1. 'Amal-i-Šālih, Persian.
2. Rubā'iyāt of Umar-i-Khayyām, Persian.
3. Āin-i-Akbarī, English translation.

New Works.—The following new work was sanctioned during the year to be taken up early next year :—

1. Varna-ratnā-kara.

53. Sanskrit Manuscripts.

The Government of India agreed to the permanent loan to the Society of a large collection of about 12,000 Sanskrit manuscripts hitherto preserved by the Archaeological Section, Indian Museum, Calcutta. The Council gratefully accepted the offer and these 12,000 manuscripts were made over to the Society during the year. A handlist of these manuscripts will be prepared in due course.

54. Catalogue of Sanskrit Manuscripts.

The work during the year 1936 was concentrated upon the task of revising and making press ready the entire copy for the balance of Volume VIII, on Tantra, with a view to printing it off during the year 1937. This revision was almost completed by the end of the year.

55. Arabic and Persian Manuscripts, Search and Catalogue.

The work in this department was steadily pursued.

Binding.—The binding and repairing of previously and newly acquired MSS. was continued and 84 MS. volumes were bound during the year, making a total of 1,192 MSS. bound and repaired since the end of 1924.

Acquisitions.—During the year seventy-two manuscripts were acquired by purchase at a cost of Rs.197 and six MSS. were acquired by presentation.

Reference books.—The collection of Persian and Arabic MSS. catalogues was again added to and its completion continues an object of attention. A number of biographical works of reference were also purchased during the year.

Catalogue.—The work on the Arabic Catalogue was steadily pursued and up to 512 pages were print-ordered during the year. The remaining manuscript was revised and will probably be printed off during the coming year.

56. Numismatics.

Materials for Numismatic Supplement (for 1935-36) and for the Special Silver Jubilee Number have been received during the year and are in the press under preparation. They will be published next year.

[APPENDIX I.]

Membership Statistics.

(As calculated for December 31st, for 30 years.)

YEAR.	ORDINARY.							EXTRA-ORDINARY.					FELLOWS			
	PAYING.				NON-PAYING.			Total Ordinary Members.	EXTRA-ORDINARY.				Grand Total Membership.	Honorary.	Ordinary.	
	Resident.	Non-Resident.	Foreign.	Total.	Absent.	Life.	Total.		Centenary Honorary.	Associate.	Institutional.	Anniversary Honorary.				
1907 ..	174	175	20	369	31	20	51	420	4	12	..	..	16	436	28	..
1908 ..	181	193	17	391	38	19	57	448	4	13	..	..	17	465	30	..
1909 ..	183	217	13	413	40	20	60	473	4	14	..	..	18	491	28	..
1910 ..	209	217	16	442	43	23	66	508	4	14	..	..	18	526	27	17
1911 ..	200	225	19	444	53	22	75	519	3	14	..	..	17	536	28	19
1912 ..	203	229	19	451	43	23	66	517	3	13	..	..	16	533	27	24
1913 ..	200	211	19	430	46	23	69	499	3	14	..	..	17	516	27	28
1914 ..	191	187	19	397	50	26	76	473	3	14	..	..	17	490	24	27
1915 ..	171	188	21	380	40	25	65	445	3	15	..	..	18	463	29	31
1916 ..	145	159	18	322	60	25	85	407	3	15	..	..	18	425	26	33
1917 ..	150	144	15	309	45	24	69	378	2	12	..	..	14	392	22	35
1918 ..	153	145	17	315	43	24	67	382	2	10	..	..	12	394	22	39
1919 ..	141	128	15	284	64	25	89	373	2	11	..	..	13	386	18	36
1920 ..	161	134	15	310	32	26	58	368	2	11	..	..	13	381	28	38
1921 ..	160	132	16	308	26	26	51	359	2	12	..	..	14	373	28	40
1922 ..	160	141	16	317	26	26	52	369	2	13	..	..	15	384	30	39
1923 ..	147	120	13	280	30	27	57	337	2	11	..	..	13	350	28	37
1924 ..	209	134	12	355	29	28	57	412	2	12	..	..	14	426	27	37
1925 ..	263	137	12	412	23	27	50	462	2	12	..	..	14	476	26	34
1926 ..	319	162	20	501	23	28	51	552	2	12	..	..	14	566	25	34
1927 ..	328	167	18	513	28	33	61	574	2	13	..	..	15	589	28	38
1928 ..	344	167	23	534	42	46	88	622	1	12	..	..	13	635	28	40
1929 ..	331	181	21	533	36	49	85	618	1	10	2	..	13	631	27	43
1930 ..	291	194	37	522	22	52	74	596	1	8	2	..	11	607	29	47
1931 ..	228	184	29	441	26	52	78	519	1	8	5	..	14	533	29	46
1932 ..	222	126	23	371	27	54	81	452	1	7	5	..	13	465	28	45
1933 ..	194	126	27	347	33	56	89	436	..	7	6	..	13	449	26	49
1934 ..	217	112	30	359	26	57	83	442	..	6	7	12	25	467	26	47
1935 ..	206	107	28	341	28	56	84	425	..	5	7	11	23	448	24	44
1936 ..	214	106	24	344	16	55	71	415	..	5	10	11	26	441	21	46

[APPENDIX II.]

List of Publications issued by the Royal Asiatic Society of Bengal during 1936.**(a) Bibliotheca Indica :**

		Price		
		Rs.	As.	P.
(1) Amal-i-Salih, Vol. III, Fasc. 4 (1 unit)	..	1	0	0
(2) Tabaqat-i-Akbari, English, Vol. 2 (9 units)	..	11	4	0

(b) Journal and Proceedings (Third Series) :

Vol. I : Year Book (12 units)	..	..	4	8	0
Vol. I (Letters) : No. 3 (8 „ )	..	..	3	0	0
Vol. II (Letters) : No. 1 (10 „ )	..	..	3	12	0
Vol. II (Letters) : No. 2 (8 „ )	..	..	3	0	0
Vol. II (Science) : No. 1 (6 „ )	..	..	2	4	0

Title-page and Index to Vol. I (Free to Members).

(c) Journal (Old Series) :

Vol. LXXV : No. 5 (5 units)	1	14	0
-----------------------------	----	----	---	----	---

(d) Advance Proceedings :

Vol. III : Nos. 1-4 (Free to Members).

(e) Miscellaneous :

Proceedings, Twenty-third Indian Science Congress	18	0	0
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Abstract Statement
of
Receipts and Disbursements
of the
Royal Asiatic Society of Bengal
for
the Year 1936

STATEMENT No. 1.

1936.

General

Income and Expenditure Account

			Rs.	As.	P.	Rs.	As.	P.
TO ESTABLISHMENT :								
Salaries and Allowances	..	..	31,088	8	3			
Commission	..	..	240	11	3			
						31,329	3	6
GENERAL EXPENDITURE.								
Stationery ..	..	..	304	11	0			
Fans and Light	..	..	477	3	3			
Telephone ..	..	..	293	1	0			
Taxes ..	..	..	2,327	10	0			
Postage ..	..	..	1,236	0	0			
Contingencies	..	..	733	0	3			
Printing Circulars, etc.	..	..	1,042	7	0			
Audit Fee ..	..	..	250	0	0			
Petty Repairs	..	..	50	14	0			
Insurance ..	..	..	500	0	0			
Menials' Clothing	..	..	162	11	0			
Furniture ..	..	..	34	8	0			
Bonus ..	..	..	150	0	0			
Honorarium	..	..	2,500	0	0			
Legal Fees..	..	..	700	0	0			
						10,762	1	6
LIBRARY AND COLLECTIONS.								
Books ..	..	..	2,196	15	5			
Binding ..	..	..	613	4	0			
						2,810	3	5
PUBLICATIONS.								
Journal and Proceedings and Memoirs		....				4,274	15	0
CONTRIBUTION TO FUNDS.								
Provident Fund Contribution for 1936		....				685	2	0
						49,861	9	5
TRANSFER TO—								
Building Repair Fund Account	..	....				2,000	0	0
SUNDRY ADJUSTMENTS.								
Bad Debts written-off ..	..	....				475	0	0
BALANCE AS PER BALANCE SHEET	..	....				2,90,939	12	8
						3,43,276	6	1

STATEMENT No. 1.

Fund.

1936.

for the year to 31st December, 1936.

		Rs.	As.	P.	Rs.	As.	P.
By BALANCE FROM LAST ACCOUNT	2,75,327	13	5		

CASH RECEIPTS.

Interest on Investments	..	10,012	0	0			
Interest on Fixed Deposits	..	781	13	0			
Advertising	..	9,600	0	0			
Miscellaneous	..	233	12	6			
Government Grant	..	1,600	0	0			
Rent	..	9,300	0	0			
Contribution from Indian Science Congress..	..	600	0	0			
					32,127	9	6

PERSONAL ACCOUNT.

Members' Subscriptions	..	10,094	0	0			
Admission Fees	..	832	0	0			
Life Membership Fees	..	388	0	0			
Institutional Membership Fees	..	50	0	0			
Miscellaneous	..	83	10	0			
					11,447	10	0

TRANSFER FROM FUNDS.

Proportionate Share in General Expenditure—

Oriental Pub. Fund (1) Account	2,500	0	0				
Sanskrit MSS. Fund Account	2,000	0	0				
Arabic and Persian MSS. Fund Account	2,500	0	0				
				7,000	0	0	

PUBLICATION FUND ACCOUNT	..	....	3,667	7	2		
Appreciation. Investments revalued on 31-12-36	..	....	13,705	14	0		

3,43,276 6 1

STATEMENT No. 2.

1936.

Oriental Publication

From a monthly grant made by the Government of Bengal for the publi-
(Rs. 500), and for the publication of Sanskrit
(Less 20% from the

				Rs.	As.	P.
To Printing .. .. .	..	..	..	13	0	0
Proportionate Share in General	..	..	..
Expenditure .. .. .	..	..	..	2,500	0	0
Balance as per Balance Sheet ..	..	..	..	6,270	1	11
				8,783	1	11

STATEMENT No. 3.

1936.

Oriental Publication

From an annual grant made by the Government of Bengal of
Historical
(Less 20% from the

				Rs.	As.	P.
To Balance from last Account ..	..	..	..	3,722	10	7
Printing .. .. .	..	..	..	1,002	12	0
Balance as per Balance Sheet ..	..	..	..	74	9	5
				4,800	0	0

STATEMENT No. 4.

1936.

Sanskrit Manuscripts Fund

From an annual grant of Rs. 3,200 made by the Government of Bengal
by the Society ; and Rs. 3,600 from the
(Less 20% from the

				Rs.	As.	P.	Rs.	As.	P.
To Pension .. .. .	..	..	..	130	0	0			
Cataloguing .. .. .	..	..	..	1,200	0	0			
Purchase of MSS. .. .. .	..	..	..	411	0	0			
							1,741	0	0
Proportionate Share in General	..	..	..			
Expenditure .. .. .	..	..	..	....			2,000	0	0
Balance as per Balance Sheet ..	..	..	..	....			18,142	1	3
							21,883	1	3

STATEMENT No. 2.

Fund No. 1, in Account with R.A.S.B.

1936.

cation of Oriental Works and Works of Instruction in Eastern Languages
Works hitherto unpublished (Rs. 250).
1st of April, 1932.)

			Rs.	As.	P.
By Balance from last Account	..	..	1,583	1	11
Annual Grant	..	..	7,200	0	0
			<hr/>		
			8,783	1	11

STATEMENT No. 3.

Fund No. 2, in Account with R.A.S.B.

1936.

Rs. 3,000 for the publication of Arabic and Persian Works of
Interest.-
1st of April, 1932.)

			Rs.	As.	P.
By Government Grant for 1935-36, 1936-37	..	..	4,800	0	0
			<hr/>		
			4,800	0	0

STATEMENT No. 4.

Account, in Account with R.A.S.B.

1936.

for the publication of the Catalogue of Sanskrit Manuscripts acquired
same Government for Research Work.
1st of April, 1932.)

			Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account	..	....				16,443	1	3
Annual Grant for Research Work,								
1936-37	..	..	2,880	0	0			
Annual Grant for Cataloguing	..	..	2,560	0	0			
			<hr/>			5,440	0	0
						<hr/>		
						21,883	1	3

STATEMENT No. 5.

1936.

Arabic and Persian Manuscripts

From an annual grant of Rs. 5,000 made by the Government of India for
by the Society ; for the purchase of further Manuscripts,
Manuscripts found in

	Rs.	As.	P.	Rs.	As.	P.
To Purchase of MSS.	274	9	0			
Binding	357	8	0			
Cataloguing	2,400	0	0			
Reference Works	235	1	0			
	<hr/>			3,267	2	0
Proportionate Share in General Expenditure .. ..	....			2,500	0	0
Balance as per Balance Sheet ..	....			3,301	11	0
				<hr/>		
				9,068	13	0
				<hr/>		

STATEMENT No. 6.

1936.

Barclay Memorial

From a sum of Rs. 500 odd given in 1896 by the Surgeon
encouragement of Medical

	Rs.	As.	P.	Rs.	As.	P.
To Cost of a Medal .. ..	....			16	5	0
Balance as per Balance Sheet—						
Rs. 700, 3½% G.P. Notes, 1854-55..	703	8	0			
Surplus at date	16	7	8			
	<hr/>			719	15	8
				<hr/>		
				736	4	8
				<hr/>		

STATEMENT No. 7.

1936.

Servants' Pension Fund

Founded in 1876 as the Piddington Fund

	Rs.	As.	P.	Rs.	As.	P.
To Balance as per Balance Sheet—						
Rs. 3,000, 3½% G.P. Notes, 1854-55	3,015	0	0			
Surplus at date	116	8	6			
	<hr/>			3,131	8	6
				<hr/>		
				3,131	8	6
				<hr/>		

STATEMENT No. 8.

1936.

Annandale Memorial Fund

From donations by subscription,

	Rs.	As.	P.	Rs.	As.	P.
To Balance as per Balance Sheet—						
Rs. 4,000, 3½% G.P. Notes, 1854-55	4,020	0	0			
Surplus at date	489	13	9			
				<hr/>		
				4,509	13	9
				<hr/>		
				4,509	13	9
				<hr/>		

STATEMENT No. 9.

1936.

Permanent Library Endowment

From gifts received,

	Rs.	As.	P.	Rs.	As.	P.
To Balance as per Balance Sheet—						
Rs. 14,000, 3½% G.P. Notes, 1854-55	14,070	0	0			
Surplus at date	661	7	8			
				<hr/>		
				14,731	7	8
				<hr/>		
				14,731	7	8
				<hr/>		

STATEMENT No. 10.

1936.

Sir William Jones Memorial

From a sum gifted for the purpose in

	Rs.	As.	P.	Rs.	As.	P.
To Balance as per Balance Sheet—						
Rs. 3,000, 3½% G.P. Notes, 1854-55	3,015	0	0			
Surplus at date	112	10	0			
				<hr/>		
				3,127	10	0
				<hr/>		
				3,127	10	0
				<hr/>		

STATEMENT No. 8.

Account, in Account with R.A.S.B.

1936

started in 1926.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account			4,176	5	9
Interest realized for the year			138	8	0
Appreciation, Investments revalued on 31-12-36			195	0	0
				<hr/>		
				4,509	13	9

STATEMENT No. 9.

Fund Account, in Account with R.A.S.B.

1936.

started in 1926.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account			13,598	13	8
Interest realized for the year			450	2	0
Appreciation, Investments revalued on 31-12-36			682	8	0
				<hr/>		
				14,731	7	8

STATEMENT No. 10.

Fund Account, in Account with R.A.S.B.

1936.

1926, by Dr. U. N. Brahmachari.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account			2,884	15	0
Interest realized for the year			96	7	0
Appreciation, Investments revalued on 31-12-36			146	4	0
				<hr/>		
				3,127	10	0

STATEMENT No. 11.

1936.

Pramathanath Bose Memorial

From a sum gifted for

	Rs.	As.	P.	Rs.	As.	P.
To Balance as per Balance Sheet—						
Rs. 800, 3½% G.P.N., 1842-43 } ..	1,809	0	0			
„ 1,000 „ „ 1865 } ..						
Surplus at date	103	11	0			
				1,912	11	0
				1,912	11	0

STATEMENT No. 12.

1936.

Joy Gobind Law Memorial

From a donation for the purpose

	Rs.	As.	P.	Rs.	As.	P.
To Cost of a Medal				273	14	0
Balance as per Balance Sheet—						
Rs. 3,000, 3½% G.P. Notes, 1854-55	3,015	0	0			
Surplus at date	87	0	0			
				3,102	0	0
				3,375	14	0

STATEMENT No. 13.

1936.

*Building Fund*From a sum of Rs. 40,000 given by the Government of India
proceeds of a portion

	Rs.	As.	P.
To Balance as per Balance Sheet	6,321	9	6
	6,321	9	6

STATEMENT No. 11.

Fund Account, in Account with R.A.S.B.

1936.

the purpose in 1935.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account			1,721	4	0
Interest realized for the year			103	11	0
Appreciation, Investments revalued on 31-12-36			87	12	0
				<hr/>		
				1,912	11	0
				<hr/>		

STATEMENT No. 12.

Fund Account, in Account with R.A.S.B.

1936.

in 1929. by Dr. Satya Churn Law.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account			3,133	3	0
Interest realized for the year			96	7	0
Appreciation, Investments revalued on 31-12-36			146	4	0
				<hr/>		
				3,375	14	0
				<hr/>		

STATEMENT No. 13.

Account, in Account with R.A.S.B.

1936.

towards the rebuilding of the Society's premises, and from the sale of the Society's land.

	Rs.	As.	P.
By Balance from last Account	6,321	9	6
	<hr/>		
	6,321	9	6
	<hr/>		

STATEMENT No. 14.

1936.

Calcutta Science Congress Prize

	Rs.	As.	P.	Rs.	As.	P.
To Balance as per Balance Sheet—						
Rs. 3,000, 3½% G.P.N., 1854-55 ..	3,015	0	0			
Surplus at date	768	10	7			
	<hr/>			3,783	10	7
				<hr/>		
				3,783	10	7
				<hr/>		

STATEMENT No. 15.

1936.

Dr. Bruhl Memorial Fund

From a sum gifted for the purpose in

	Rs.	As.	P.	Rs.	As.	P.
To Balance as per Balance Sheet—						
Rs. 1,000, 3½% G.P.N., 1854-55 ..	1,005	0	0			
Surplus at date	22	0	0			
	<hr/>			1,027	0	0
				<hr/>		
				1,027	0	0
				<hr/>		

STATEMENT No. 16.

1936.

Building Repair Fund

	Rs.	As.	P.
To Building Repairs	1,530	2	0
Balance as per Balance Sheet	8,337	14	0
	<hr/>		
	9,868	0	0
	<hr/>		

STATEMENT No. 14.

Fund Account, in Account with R.A.S.B.

1936.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account			3,540	15	7
Interest realized for the year			96	7	0
Appreciation, Investments revalued on 31-12-36			146	4	0
				<hr/>	<hr/>	<hr/>
				3,783	10	7

STATEMENT No. 15.

Account, in Account with R.A.S.B.

1936.

1929, by the Brühl Farewell Committee.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account			946	3	0
Interest realized for the year			32	1	0
Appreciation, Investments revalued on 31-12-36			48	12	0
				<hr/>	<hr/>	<hr/>
				1,027	0	0

STATEMENT No. 16.

Account, in Account with R.A.S.B.

1936.

	Rs.	As.	P.
By Balance from last Account ..	7,868	0	0
Transfer from R.A.S.B. General Fund ..	2,000	0	0
	<hr/>	<hr/>	<hr/>
	9,868	0	0

STATEMENT No. 17.

1936.

International Catalogue of Scien-

			Rs.	As.	P.
To Balance as per Balance Sheet	..	..	4,374	7	8
			<hr/>	<hr/>	<hr/>
			4,374	7	8

STATEMENT No. 18.

1936.

Provident Fund Account,

From contributions by the

			Rs.	As.	P.	Rs.	As.	P.
To Cost of a stamp	..	..	....			0	1	0
Balance as per Balance Sheet—								
Rs. 5,000, 3% G.P.N., 1941	..		5,250	0	0			
„ 6,000, 5-year Postal Cash Cer-	..							
tificates	..		5,512	8	0			
Savings Bank and Advances	..		6,789	3	0			
			<hr/>	<hr/>	<hr/>	17,551	11	0
						<hr/>	<hr/>	<hr/>
						17,551	12	0

STATEMENT No. 19.

1936

Advances Account,

			Rs.	As.	P.
To Balance from last Account	..	..	1,135	0	0
Payments during the year	..	..	1,355	0	0
			<hr/>	<hr/>	<hr/>
			2,490	0	0

STATEMENT No. 17.*tific Literature, in Account with R.A.S.B.***1936.**

			Rs.	As.	P.
By Balance from last Account	..	..	4,374	7	8
			<u>4,374</u>	<u>7</u>	<u>8</u>

STATEMENT No. 18.*in Account with R.A.S.B.***1936.**

Society and its Staff.

			Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account	..	....				15,663	13	6
Interest realized during the year	..	23	8	6				
Staff Contribution for the year	..	685	2	0				
Society's Contribution for the year	..	685	2	0				
						<u>1,393</u>	<u>12</u>	<u>6</u>
Interest realized from Savings Bank, etc.	..	....				209	12	0
Appreciation, Investments revalued on 31-12-36	..	....				284	6	0
						<u>17,551</u>	<u>12</u>	<u>0</u>

STATEMENT No. 19.*in Account with R.A.S.B.***1936.**

			Rs.	As.	P.
By Refunds during the year	..	..	940	0	0
Balance as per Balance Sheet	..	..	1,550	0	0
			<u>2,490</u>	<u>0</u>	<u>0</u>

STATEMENT No. 20.

1936.

Personal

	Rs. As. P.	Rs. As. P.
To Balance from last Account ..	....	3,126 1 9
Advances .. ..	....	2,532 2 3
Asiatic Society's Subscriptions, etc. ..	11,447 10 0	
Subscriptions to Journal and Proceedings, and from Book Sales, etc.	3,667 7 2	
	<hr/>	15,115 1 2

20,773 5 2

STATEMENT No. 21.

1936.

Publication Fund Account,

From sale proceeds

	Rs. As. P.	Rs. As. P.
To Books returned, etc.	179 9 0
Publications of the R.A.S.B.	3,667 7 2
Balance as per Balance Sheet	7,229 5 9

11,076 5 11

STATEMENT No. 20.

Account.

1936.

		Rs.	As.	P.	Rs.	As.	P.
By Cash Receipts during the year ..	....				16,698	13	5
Bad Debts written off, R.A.S.B. ..	475	0	0				
Books returned, etc. ..	179	9	0				
					654	9	0
Balance as per Balance Sheet ..	....				3,419	14	9

Outstandings.	Amount due to Society.			Amount due by Society.		
	Rs.	As.	P.	Rs.	As.	P.
Members ..	3,715	13	0	721	13	0
Subscribers, etc. ..	27	5	0	122	0	0
Bill Collector's Deposit ..	...	...	...	300	0	0
Miscellaneous ..	1,133	10	3	313	0	6
	4,876	12	3	1,456	13	6

20,773 5 2

STATEMENT No. 21.

in Account with R.A.S.B.

1936.

of publications.

	Rs.	As.	P.	Rs.	As.	P.
By Balance from last Account ..	....			7,236	7	0
Cash Sale of Publications ..	....			172	7	9
Credit Sale of Publications, etc. ..	2,179	7	2			
Subscriptions to Journal and Proceedings, etc. ..	1,488	0	0			
				3,667	7	2
				11,076	5	11

STATEMENT No. 22.

1936.

(1) Deposit Account (Savings Bank

	Rs.	As.	P.	Rs.	As.	P.
To Balance from last Account ..	....			4,051	5	6
Deposits of Interest realized from loans during the year ..	23	8	6			
Deposits of Contributions during the year ..	1,369	0	0			
Deposits of Advances returned ..	940	0	0			
				2,332	8	6
Interest realized for the year 1936 ..	....			209	12	0
				6,593	10	0

STATEMENT No. 23.

1936.

(2) Deposit Account (Fixed Deposit

	Rs.	As.	P.
To Balance from last Account	25,000	0	0
Deposits during the year	100	0	0
	25,100	0	0

STATEMENT NO. 24.

1936.

(3) Deposit Account (Fixed Deposit

	Rs.	As.	P.
To Balance from last Account	15,000	0	0
Deposits during the year	30,000	0	0
	45,000	0	0

STATEMENT No. 22.

Deposit with Imperial Bank of India).

1936.

	Rs.	As.	P.	Rs.	As.	P.
By Withdrawal for Staff Advances, etc.			1,355	0	0
Cost of a stamp			0	1	0
Balance as per Balance Sheet			5,238	9	0

6,593 10 0

STATEMENT No. 23.

with Central Bank of India).

1936.

	Rs.	As.	P.
By Withdrawals during the year	25,100	0	0
	25,100	0	0

STATEMENT No. 24.

with Imperial Bank of India).

1936.

	Rs.	As.	P.
By Balance as per Balance Sheet	45,000	0	0
	45,000	0	0

STATEMENT No. 25.

1936.

(4) Investment

	Rs.	As.	P.
To Balance from last Account	3,16,052	2	0
Appreciation, Investments revalued on 31-12-36..	15,623	6	0
	3,31,675	8	0

Face Value Rs.	FUNDS.	Rate %	31st December, 1936, Valuation.	31st December, 1935, Valuation.	Appreciation.
			Rs.	A. P.	Rs. A. P.
	ROYAL ASIATIC SOCIETY OF BENGAL.				
	PERMANENT RESERVE.				
16,700	3½% G.P. Notes, 1842-43 ..	...		
1,53,700	3½% G.P. Notes, 1854-55 ..	...		
44,300	3½% G.P. Notes, 1865 ..	...		
6,000	3½% G.P. Notes, 1879 ..	...		
32,000	3½% G.P. Notes, 1900-01 ..	...		
2,52,700		100/8-	2,53,963	8 0	2,41,644 6 0
500	3% G.P. Notes, 1896-97 ..	90/-	450	0 0	431 4 0
	TEMPORARY RESERVE.				
19,000	3½% G.P. Notes, 1900-01 ..	100/8-	19,095	0 0	18,168 12 0
11,400	4½% Loan, 1955-60 ..	120/8-	13,737	0 0	13,295 4 0
	BARCLAY MEMORIAL FUND.				
700	3½% G.P. Notes, 1854-55 ..	100/8-	702	8 0	689 6 0
	SERVANTS' PENSION FUND.				
3,000	3½% G.P. Notes, 1854-55 ..	100/8-	3,015	0 0	2,968 12 0
	ANNANDALE MEMORIAL FUND.				
4,000	3½% G.P. Notes, 1854-55 ..	100/8-	4,020	0 0	3,825 0 0
	PERMANENT LIBRARY ENDOWMENT FUND.				
14,000	3½% G.P. Notes, 1854-55 ..	100/8-	14,070	0 0	13,387 8 0
	SIR WILLIAM JONES MEMORIAL FUND.				
3,000	3½% G.P. Notes, 1854-55 ..	100/8-	3,015	0 0	2,968 12 0
	PRAMATHANATH BOSE MEMORIAL FUND.				
800	3½% G.P. Notes, 1842-43 ..	100/8-			
1,000	3½% G.P. Notes, 1865 ..	100/8-	1,809	0 0	1,721 4 0
	JOY GOBIND LAW MEMORIAL FUND.				
3,000	3½% G.P. Notes, 1854-55 ..	100/8-	3,015	0 0	2,968 12 0
	CALCUTTA SCIENCE CONGRESS PRIZE FUND.				
3,000	3½% G.P. Notes, 1854-55 ..	100/8-	3,015	0 0	2,968 12 0
	DR. BRÜHL MEMORIAL FUND.				
1,000	3½% G.P. Notes, 1854-55 ..	100/8-	1,005	0 0	956 4 0
	PROVIDENT FUND.				
3,000	3% Loan, 1941 ..	105/-	5,250	0 0	5,190 10 0
6,000	Post Office 5-year Cash Certificates ..	91/14-	5,512	8 0	5,287 8 0
3,23,100			3,31,675	8 0	3,16,052 2 0
					15,623 6 0

STATEMENT No. 25.

Account.

1936.

			Rs.	As.	P.
By Balance as per Balance Sheet	..	..	3,31,675	8	0
			<hr/>		
			3,31,675	8	0
			<hr/>		

STATEMENT No. 26.

1936.

Cash

For the year ended 31st

To	Rs.	As.	P.	Rs.	As.	P.
Balance from last Account				4,370	4	7
General Fund Account	32,127	9	6			
Oriental Publication Fund No. 1 Account	7,200	0	0			
Oriental Publication Fund No. 2 Account	4,800	0	0			
Sanskrit Manuscripts Fund Account ..	5,440	0	0			
Arabic and Persian Manuscripts Fund Account	5,000	0	0			
Barclay Memorial Fund Account	22	7	0			
Servants' Pension Fund Account	96	7	0			
Annandale Memorial Fund Account	138	8	0			
Permanent Library Endowment Fund Account	450	2	0			
Sir William Jones Memorial Fund Account	96	7	0			
Pramathanath Bose Memorial Fund Account	103	11	0			
Joy Gobind Law Memorial Fund Account	96	7	0			
Calcutta Science Congress Prize Fund Account	96	7	0			
Dr. Brühl Memorial Fund Account	32	1	0			
Provident Fund Account	1,393	12	6			
Advances Account	940	0	0			
Personal Account	16,698	13	5			
Publication Fund Account	172	7	9			
Savings Bank Deposit Account, Imperial Bank of India, Calcutta	1,355	0	0			
Fixed Deposit Account, Central Bank of India, Calcutta	25,100	0	0			
				1,01,360	4	2
				1,05,730	8	9

1,05,730 8 9

STATEMENT No. 27.

1936.

Balance

As at 31st

LIABILITIES.

	Rs. As. P.	Rs. As. P.
General Fund Account	2,90,939 12 8	
Oriental Publication Fund No. 1 Account	6,270 1 11	
Oriental Publication Fund No. 2 Account	74 9 5	
Sanskrit Manuscripts Fund Account ..	18,142 1 3	
Arabic and Persian Manuscripts Fund Account	3,301 11 0	
Barclay Memorial Fund Account ..	719 15 8	
Servants' Pension Fund Account ..	3,131 8 6	
Annandale Memorial Fund Account ..	4,509 13 9	
Permanent Library Endowment Fund Account	14,731 7 8	
Sir William Jones Memorial Fund Account	3,127 10 0	
Pramathanath Bose Memorial Fund Account	1,912 11 0	
Joy Gobind Law Memorial Fund Account	3,102 0 0	
Building Fund Account	6,321 9 6	
Calcutta Science Congress Prize Fund Account	3,783 10 7	
Dr. Brühl Memorial Fund Account ..	1,027 0 0	
Building Repair Fund Account ..	8,337 14 0	
International Catalogue of Scientific Literature, London	4,374 7 8	
Provident Fund Account	17,551 11 0	
Publication Fund Account	7,229 5 9	
		3,98,589 1 4
		3,98,589 1 4

We have examined the above Balance Sheet and the appended detailed accounts with the Books and Vouchers presented to us and certify that they are in accordance therewith, and, in our opinion, set forth correctly the position of the Society as at 31st December, 1936.

PRICE, WATERHOUSE, PEAT & Co.,

Calcutta,
12th February, 1937.Auditors,
Chartered Accountants,
Registered Accountants.

STATEMENT No. 27.

Sheet.

1936.

December, 1936.

ASSETS.

			Rs.	As.	P.		Rs.	As.	P.
Advances Account	..	..	1,550	0	0				
Personal Account	..	..	3,419	14	9				
			<hr/>				4,969	14	9
Deposits:—									
Savings Bank Deposit Account, Imperial Bank of India	..	..	5,238	9	0				
Fixed Deposit Account, Imperial Bank of India	..	..	45,000	0	0				
			<hr/>				50,238	9	0
Investment Account	..	..	....				3,31,675	8	0
Cash Account:—									
In hand	..	..	72	13	6				
With the Imperial Bank of India, on Current Account	..	..	11,632	4	1				
			<hr/>				11,705	1	7

3,98,589 1 4

S. L. HORA,
Honorary Treasurer.

[APPENDIX IV.]

Abstract Proceedings Council, 1936.

(Rule 48 f.)

ACCOMMODATION—

Request for the use of the Society's Hall by the Himalayan Club.
Approve.

No. 3. 27-1-36.

Application from Mohammed Yakoob that the Society may kindly let out to him a piece of vacant land on the south eastern side of the Society's premises for opening an aerated water shop. Reject.

No. 14. 25-5-36.

Request for the use of the Society's Committee room for a Committee Meeting of the National Institute of Sciences of India on Saturday, the 27th June, at 5 p.m. Grant.

No. 10. 22-6-36.

Request for the use of the Society's Lecture Hall by the Mining and Geological Institute of India. Record; General Secretary's action approved.

No. 2. 27-7-36.

Request for the use of the Society's Committee room and Lecture Hall on August 29th and 30th by the National Institute of Sciences of India. Grant.

No. 5. 25-8-36.

Letter from the Honorary Secretary, Himalayan Club, enquiring whether the Society would let out a corner room for the use of their club. Unable to rent out the corner room in view of the fact that it may be needed for the Society's own use.

No. 3. 30-9-36.

Request for the use of the Society's Hall by the Mining and Geological Institute of India. Grant.

No. 1. 17-12-36.

AGENCIES---

Appointment of an Agent to the Society in Japan. That the General Secretary be empowered to make the necessary arrangements to appoint a suitable agent.

No. 16. 27-1-36.

ANNUAL MEETING—

Annual Meeting. Record.

No. 12. 27-1-36.

Annual Report. Accept.

No. 13. 27-1-36.

ARTISTIC POSSESSIONS—

Letter from Mr. D. C. Ghose offering to present to the Society a portrait of the late Sir C. C. Ghose. Accept with thanks to donor.

No. 4.

27-1-36.

Letter from the Master, H. M.'s Mint, regarding the Bust of W. N. Forbes. Get the bust repaired under the supervision of the Mint Master.

No. 16.

30-9-36.

BIBLIOTHECA INDICA—

Proposal by Dr. S. K. Chatterji to publish in the Bibliotheca Indica the Varna-ratna-kara to be edited jointly by Dr. Chatterji and Pandit Babua Misra. Dr. Chatterji to contribute an English introduction. An Index Verborum to be added. No remuneration to Dr. Chatterji; usual editor's remuneration for the Maithili text to Pandit Misra. Accept for publication.

No. 11.

27-4-36.

Request from the Theosophical University Press, California, to send frequently works relating to Oriental studies published by the Society for reviewing in their 'Forum'. Supply them with price lists of the Society's publications.

No. 11.

22-6-36.

BUILDING—

Recommendation Finance Committee No. 4 of 24-9-36. Recommendation of the General Secretary and the Honorary Treasurer with regard to the advice from Mr. M. N. Mukherjee, B.E., Consulting Engineer to the Calcutta University, regarding Building Repairs. Recommended to the Council to accept the suggestions of Mr. M. N. Mukherjee as contained in his letters of 2-9-36 and 21-9-36. That the work of repairs should be taken up at once which should be entrusted to Messrs. Martin & Co., who should be asked to do the half-terracing of the roof except the north-west and south portions as suggested by Mr. Mukherjee and Messrs. Lyall Marshall & Co. to do the work of covering the T. iron roofs with 'C' grade Malthoid with gravel finish (5 layers) at Rs. 21 per 100 sq. ft. under the supervision of Messrs. Martin & Co. As the work is very urgent the General Secretary be requested to place the order with Messrs. Martin & Co. immediately. Accepted by Council.

No. 8.

30-9-36.

Matters relating to the repairs to the Society's building. Accept recommendations of the Finance Committee; letter of thanks to be sent on behalf of the Society to Mr. M. N. Mukherjee for his valuable advice and help.

No. 9.

30-9-36.

Report completion of the repairs to the roof of the Society's building, and the re-wiring. Record.

No. 3.

24-11-36.

COMMITTEES—

The Standing Committees of the Society for 1936-37 to be constituted as follows:—

Finance :

President	}	<i>Ex-Officio.</i>
Treasurer		
General Secretary		
Dr. J. N. Mukherjee.		
Dr. Baini Prashad		

Library :

President	}	<i>Ex-Officio.</i>
Treasurer		
General Secretary		
Philological Secretary		
Jt. Philological Secretary		
Biological Secretary		
Physical Science Secretary		
Anthropological Secretary		
Medical Secretary		
Library Secretary		

Publication :

President	}	<i>Ex-Officio.</i>
Treasurer		
General Secretary		
Philological Secretary		
Jt. Philological Secretary		
Biological Secretary		
Physical Science Secretary		
Anthropological Secretary		
Medical Secretary		
Library Secretary		

No. 3.

24-2-36.

CONDOLENCES—

Report death of Sir R. N. Mookerjee. Resolved: That the Council of the Royal Asiatic Society of Bengal place on record their deep sense of sorrow at the death of Sir Rajendranath Mookerjee, K.C.I.E., K.C.V.O., who had been a President of the Society and a member of Council for several years; also their appreciation of the great services which the late Sir Rajendranath had rendered to the Society. The resolution, moved by the Chairman, was adopted all members standing. Also resolved that the condolence of the Council be communicated to Lady Mookerjee, and the General Secretary should arrange for an obituary notice to be read at the Monthly Meeting of the Society.

No. 1.

25-5-36.

CONGRATULATIONS AND THANKS.

Letter from Mr. D. C. Ghose offering to present to the Society a portrait of the late Sir C. C. Ghose. Accept with thanks to donor.

No. 4.

27-1-36.

Letter of thanks to H.E. the Viceroy for the acceptance by him of office of a Patron of the Society. Record and announce in the Monthly Meeting.

No. 1.

27-7-36.

Congratulation to Dr. H. E. Stapleton on his being admitted to the degree of Doctor of Literature by the University of Oxford. Record.
No. 1. 30-9-36.

COUNCIL—

Finance Committee No. 6 of 23-1-36. Absence of Honorary Treasurer from Calcutta. Recommended that during the Society's financial year 1936-37, the General Secretary for the time being be authorised automatically to officiate as Honorary Treasurer to the Society during any absence of the Honorary Treasurer for the time being from Calcutta from the initial date of any such absence until notification of his return to Calcutta and resumption of Office. Accepted by Council.

No. 8.

27-1-36

Officiating arrangements, Honorary Treasurer. Modify the general resolution regarding officiating arrangements to the usual specific one as follows—That the General Secretary (Mr. Johan van Manen) be authorised to officiate as Honorary Treasurer to the Society during the absence of the Honorary Treasurer, Dr. S. L. Hora, from Friday, the 14th January, 1936, until notification of the latter's return to Calcutta and resumption of office, and put up the general one in the first meeting of the new Council.

No. 9.

27-1-36.

Acceptance of seat on the Council by Council members. Record.
No. 1. 24-2-36.

Absence of Honorary Treasurer from Calcutta (postponed from the Council Meeting of 27-1-36). Resolved that during the Society's financial year 1936-37, the General Secretary, for the time being, be authorised automatically to officiate as Honorary Treasurer, during the absence from Calcutta of the Honorary Treasurer, for the time being, from the initial date of any such absence until notification of his return to Calcutta and resumption of office.

No. 6.

24-2-36.

Report General Secretary's interview with the President, H. E. the Governor of Bengal. Record. Fix Tuesday, 31st March as date for next Council Meeting and accept with thanks suggestion to meet at Government House.

No. 11.

24-2-36.

Letter from the Asst. Secretary to H. E. the Governor of Bengal regarding the Council Meeting of the Society in Government House on March 31st. Record.

No. 2.

31-3-36.

Leave General Secretary. Resolved that Mr. van Manen be allowed leave of absence for six months from such date as he may find convenient and that an honorarium of Rs. 7,000 be paid to him which will include his ordinary monthly compensation allowance for the period. That Sir Upendranath Brahmachari be requested to act as General Secretary to the extent of dealing with all major questions and signing correspondence, taking full responsibility; and that Dr. Hidayat Hosain be requested generally to assist Sir Upendranath Brahmachari, taking charge of the office and preparing matters for Sir Upendranath.

No. 10.

27-4-36.

Report absence of General Secretary from the 16th May and taking over charge by Sir U. N. Brahmachari. Record.

No. 3.

25-5-36.

Notice of absence of the Library Secretary. Mr. Percy Brown to act.

No. 4.

25-8-36

The question of having Council Meeting in October (Pooja holidays are from 19th to 30th October). No Committee and Council meetings in October.

No. 12.

30-9-36.

Report return from leave of the General Secretary. Record.

No. 1.

24-11-36.

Informal consideration composition of Council, 1937-38.

After discussion, the following list of candidates for nomination to next year's Council was placed before the meeting for consideration.

President	..	..	H. E. Sir John Anderson.
Vice-President	..	..	Sir U. N. Brahmachari.
"	..	..	Dr. A. M. Heron.
"	..	..	Mr. Percy Brown.
"	..	..	Lt.-Col. N. Barwell.
General Secretary	..	..	Mr. Johan van Manen.
Treasurer	..	..	Dr. S. L. Hora.
Phil. Secretary	..	..	Dr. S. K. Chatterji.
Jt. Phil. Secretary	..	..	Dr. M. Hidayat Hossain.
Nat. Hist. Secretary (Biology)..			Dr. Bainsi Prashad.
" " " (Phys. Science)			Dr. J. N. Mukherjee.
Anthropological Secretary	..	..	R. B. R. Chanda
Medical Secretary	..	..	Lt.-Col. R. N. Chopra.
Library Secretary	..	..	Mr. M. Mahfuz-ul Haq.
Member of Council	..	..	Mr. C. C. Calder.
"	..	..	Mr. N. G. Majumdar.
"	..	..	Mr. K. C. Mahindra.
"	..	..	Dr. B. S. Guha.
"	..	..	Mr. W. D. West.
"	..	..	Sir John Lort-Williams.

Unanimously resolved that the General Secretary do print and circulate to the members of Council the list of the Council as at present constituted, together with the new list placed before the meeting, and provided with a new column for additional names; and that these lists be returned to the General Secretary within a week of date of issue; and that a list be compiled of the candidates finally proposed and be placed before the next Council Meeting to be voted upon.

No. 13.

24-11-36.

Council nomination, 1936-37. The General Secretary reported that 17 Council members had returned the list of candidates circulated, duly signed and unanimously approved with one alternate suggestion. Resolved that the list of names placed before the Council in the November meeting be declared that of the Council candidates for election to next year's Council, and that it be ordered to be issued to Resident members, as prescribed in Rule 44.

No. 11.

17-12-36.

EXCHANGE OF PUBLICATIONS—

Application for an exchange of publication from the Toyo Bunko, (The Oriental Library), Tokyo, Japan. Exchange, 'Journal (Letters and Science).'

No. 12.

31-3-36.

Letter from Dr. Baini Prashad requesting sympathetic consideration of a request from the Field Museum of Natural History. Grant on exchange basis. The Field Museum of Natural History be requested to send us the back numbers of their publications which are lacking in the set, viz:

- (a) Botanical Series from 1913-1936.
- (b) Zoological Series from 1913-1936.
- (c) Geological Series from 1913-1936.
- (d) Ornithological Series from 1906-1936,

in exchange for the back numbers of the Society's Proceedings and Journal as far as available. The Field Museum be further requested to continue sending to the Society the above series without any break, in addition to the Anthropological and Report Series which are being received from them in exchange.

No. 5.

27-7-36.

Request for an exchange of the Society's publications with the Trivandrum Sanskrit Series from the Curator, Publication of Oriental Manuscripts, Trivandrum. Exchange the Sanskrit publications of the Society with the Trivandrum Sanskrit Series.

No. 2.

30-9-36.

FANS—

Recommendation Finance Committee No. 6 of 19-11-36. Fans. Renewals of fans to be taken in hand, but all fans to be individually tested in the first instance and the General Secretary to obtain quotations and place them before the next Finance Committee. Accepted by Council.

No. 8.

24-11-36.

Recommendation Finance Committee No. 4 of 16-12-36. Replacement of Society's fans. Defer. Accepted by Council.

No. 6.

17-12-36.

FELLOWS—

Recommendations of the meeting of Resident Fellows. Accept; put up for election in the Annual Meeting, Dr. S. K. Chatterji, Dr. A. M. Heron, Mr. N. G. Majumdar and Nawab Habib-ur Rahman Shirwani.

No. 7.

27-1-36.

Recommendation of the meeting of Resident Fellows on 16th June, 1936. Accept the recommendation that the title of Fellows should henceforth be 'F.R.A.S.B.' instead of F.A.S.B. as a consequential change of the Society's name from 'Asiatic Society of Bengal' to 'Royal Asiatic Society of Bengal'. It was resolved to communicate this change of title of Fellows to the next Ordinary Monthly Meeting.

No. 12.

22-6-36.

FINANCE—

Recommendations of the Finance Committee of 23-1-36. Accept with the following modifications. Council subscriptions to be invited to meet expenditure of Council tea. The cost of the General Meeting tea to be debited to the Society.

No. 8.

27-1-36.

Recommendation Finance Committee No. 3 of 23-1-36. Society's Monthly General Meeting Tea expenditure. Recommend that tea be provided to General Meetings and Council Meetings and the cost debited to the Society. Council order: Council subscriptions to be invited to meet expenditure for Council teas. The cost for the General Meeting tea to be debited to Society.

No. 8.

27-1-36.

Finance Committee No. 5 of 23-1-36. Remuneration to staff working on holidays. Recommendation : Hold over pending collection of information concerning practices in various offices. Accepted by Council.

No. 8.

27-1-36.

Finance Committee No. 6 of 23-1-36. Absence of Honorary Treasurer from Calcutta. Recommended that during the Society's financial year, 1936-37, the General Secretary for the time being be authorised automatically to officiate as Honorary Treasurer to the Society during any absence of the Honorary Treasurer for the time being from Calcutta from the initial date of any such absence until notification of his return to Calcutta and resumption of Office. Accepted by Council.

No. 8.

27-1-36.

Recommendation Finance Committee No. 7 of 23-1-36. Application from S. K. Roy for a loan of Rs. 250 from the Provident Fund. Grant, to be returned in monthly instalments of Rs. 10 at 3% per annum. Accepted by Council.

No. 8.

27-1-36.

Recommendation Finance Committee No. 8 of 23-1-36. Application from R. K. Iyer for a loan of Rs. 250 from the Provident Fund. Grant, to be returned in monthly instalments of Rs. 20 at 3% per annum. Accepted by Council.

No. 8.

27-1-36.

Recommendation Finance Committee No. 9 of 23-1-36. Permanent Reserve Fund. Transfer Rs. 2,400 to Permanent Reserve Fund from closing balance. Accepted by Council.

No. 8.

27-1-36.

Recommendation Finance Committee No. 4(b) of 21-2-36. Application for a loan of Rs. 80 from the Provident Fund by B. B. Mukherjee. Grant as far as rules allow, subject to the Honorary Treasurer's approval. Interest at 3% per annum. Accepted by Council.

No. 5.

24-2-36.

Recommendations of the Finance Committee of 27-3-36. Accept. The General Secretary reported that Messrs. Lakhiraj Shewakram having since cleared all arrears no further action need be taken.

No. 8.

31-3-36.

Library Committee No. 2(a) of 31-3-36. Recommendation by the Philological Secretary for the purchase of a set of the Calcutta Sanskrit Series at a cost of approximately Rs. 100. Accepted by Council.
No. 9. 31-3-36.

Recommendation Finance Committee No. 3 of 27-3-36. The question of the renewal of the Society's Fire Insurance Policy No. 15467332, with the Commercial Union Assurance Co., Ltd., which expires on 19th April, 1936. Renew. Accepted by Council.
No. 8. 31-3-36.

Recommendation Finance Committee No. 4 of 27-3-36. The question of the realization of arrears of rent from Messrs. Lakhiraj Shewakram & Co., Lessee, 1-1, Park Street, Calcutta. The General Secretary reported that Messrs. Lakhiraj Shewakram having since cleared all arrears no further action need be taken.
No. 8. 31-3-36.

Recommendation Finance Committee No. 2(b) of 24-4-36. Consideration of re-investing the liquid cash of the Society as two fixed deposits with the Central Bank of India Ltd., Calcutta, (maturing by the end of this month). Transfer Rs. 5,000 to the current account with the Imperial Bank of India; re-invest Rs. 10,000 for six months on fixed deposit with the Central Bank. Accepted by Council.
No. 6. 27-4-36.

Recommendation Finance Committee No. 3 of 24-4-36. Application from K. Krishnamurti to be allowed to join the Society's Provident Fund. Decline. Accepted by Council.
No. 6. 27-4-36.

Recommendation Finance Committee No. 4 of 24-4-36. Application from the Society's staff for the Science Congress Bonus. That in view of the Committee's recommendation no claim for bonus can be entertained but that as an act of grace without creating a precedent a sum of Rs. 150 be paid to such members of the staff and in such proportion as may be recommended by the Honorary Treasurer and the General Secretary. Accepted by Council.
No. 6. 27-4-36.

Recommendation Library Committee No. 5(a) of 27-4-36. Subscription Indian Zoological Memoirs, Lucknow. Purchase issues not yet in the Society's Library and place standing order for future issues. Accepted by Council.
No. 7. 27-4-36.

Leave General Secretary. Resolved that Mr. van Manen be allowed leave of absence for six months from such date as he may find convenient and that an honorarium of Rs. 7,000 be paid to him which will include his ordinary monthly compensation allowance for the period. That Sir Upendranath Brahmachari be requested to act as General Secretary to the extent of dealing with all major questions and signing correspondence, taking full responsibility; and that Dr. Hidayat Hosain be requested generally to assist Sir Upendranath Brahmachari, taking charge of the office and preparing matters for Sir Upendranath.
No. 10. 27-4-36.

Remittance from Raja K. Deb, Rai Mahasai, who was removed under Rule 38 in 1934, for regularising his membership. The matter to be settled in accordance with the rules in consultation with the Honorary Treasurer.
No. 5. 30-9-36.

Recommendation Finance Committee No. 4 of 24-9-36. Recommendation of the General Secretary and the Honorary Treasurer with regard to the advice from Mr. M. N. Mukherjee, B.E., Consulting Engineer to the Calcutta University, regarding Building Repairs. Recommended to the Council to accept the suggestions of Mr. M. N. Mukherjee as contained in his letters of 2-9-36 and 21-9-36. That the work of repairs should be taken up at once which should be entrusted to Messrs. Martin & Co., who should be asked to do the half-terracing of the roof except the north-west and south portions as suggested by Mr. Mukherjee and Messrs. Lyall Marshall & Co. to do the work of covering the T. iron roofs with 'C' grade Malthoid with gravel finish (5 layers) at Rs. 21 per 100 sq. ft. under the supervision of Messrs. Martin & Co. As the work is very urgent the General Secretary be requested to place the order with Messrs. Martin & Co. immediately. Accepted by Council.

No. 8.

30-9-36.

Matters relating to the repairs to the Society's building. Accept recommendations of the Finance Committee; letter of thanks to be sent on behalf of the Society to Mr. M. N. Mukherjee for his valuable advice and help.

No. 9.

30-9-36.

Recommendation Finance Committee No. 6 of 19-11-36. Fans. Renewals of fans to be taken in hand, but all fans to be individually tested in the first instance and the General Secretary to obtain quotations and place them before the next Finance Committee. Accepted by Council.

No. 8.

24-11-36.

Recommendations of the Special Finance Committee of 15-12-36. (Budget estimates for 1937). Accept.

No. 5.

17-12-36.

Recommendation Finance Committee No. 3(d) of 16-12-36. Increment of Salaries to Staff. The Honorary Treasurer and the General Secretary to put up the proposals; menials to get their usual increment. Accepted by Council.

No. 6.

17-12-36.

Recommendation Finance Committee No. 3(c) of 16-12-36. Budget estimates for 1937. Accept. Accepted by Council.

No. 6.

17-12-36.

Recommendation Finance Committee No. 4 of 16-12-36. Replacement of Society's fans. Defer. Accepted by Council.

No. 6.

17-12-36.

Recommendation Finance Committee No. 5 of 16-12-36. Authority to make payments of bills before the end of the year. Recommend. Accepted by Council.

No. 6.

17-12-36.

Removal of names under Rule 38. 1. Shiv Bandhu Pande Rs.72; 2. G. T. Sitling Rs.66; 3. J. P. Shulka Rs.72. Apply Rules.

No. 10.

17-12-36.

Payment of bills. That the Treasurer be authorised to make payments of bills before the end of the year before they are formally passed by the Finance Committee.

No. 12.

17-12-36.

HONORARY FELLOWS—

Report death of Sir R. N. Mookerjee. Resolved: That the Council of the Royal Asiatic Society of Bengal place on record their deep sense of sorrow at the death of Sir Rajendranath Mookerjee, K.C.I.E., K.C.V.O., who had been a President of the Society and a member of Council for several years; also their appreciation of the great services which the late Sir Rajendranath had rendered to the Society. The resolution, moved by the Chairman, was adopted all members standing. Also resolved that the condolence of the Council be communicated to Lady Mookerjee, and the General Secretary should arrange for an obituary notice to be read at the Monthly Meeting of the Society.

No. 1.

25-5-36.

INDIAN SCIENCE CONGRESS ASSOCIATION—

Recommendation Finance Committee No. 4 of 23-1-36. Application from the Society's staff for the Indian Science Congress Bonus. Decline. Accepted by Council.

No. 8.

27-1-36.

Recommendation Finance Committee No. 4 of 24-4-36. Application from the Society's staff for the Science Congress Bonus. That in view of the Committee's recommendation no claim for bonus can be entertained but that as an act of grace without creating a precedent a sum of Rs. 150 be paid to such members of the staff and in such proportion as may be recommended by the Honorary Treasurer and the General Secretary. Accepted by Council.

No. 6.

27-4-36.

INSTITUTIONAL MEMBERS—

Application for Institutional Membership from the Forest Research Institute, Dehra Dun. Accept the application.

No. 4.

31-3-36.

INSURANCE—

Recommendation Finance Committee No. 3 of 27-3-36. The question of the renewal of the Society's Fire Insurance Policy No. 15467332, with the Commercial Union Assurance Co., Ltd., which expires on 19th April, 1936. Renew. Accepted by Council.

No. 8.

31-3-36.

KAMALA LECTURESHIP—

Representation on the Selection Committee, Kamala Lectureship, Calcutta University. Sir Upendra Nath Brahmachari to be the Society's representative.

No. 3.

31-3-36.

LEASE—

Recommendations of the Finance Committee of 27-3-36. Accept. The General Secretary reported that Messrs. Lakhiraj Shewakram have since cleared all arrears that no further action need be taken.

No. 8.

31-3-36.

Recommendation Finance Committee No. 4 of 27-3-36. The question of the realization of arrears of rent from Messrs. Lakhiraj Shewakram & Co., Lessee, 1-1, Park Street, Calcutta. The General Secretary reported that Messrs. Lakhiraj Shewakram having since cleared all arrears no further action need be taken.

No. 8.

31-3-36.

LECTURES—

General Lectures. Dr. J. N. Mukherjee offered to deliver a General Lecture to the Society towards the end of July on 'Soil'. Accept the offer of Dr. Mukherjee with thanks, Col. Knowles to be requested to deliver a General Lecture at a time and on a date convenient to him.

No. 13.

22-6-36.

Letter from Dr. J. Ph. Vogel suggesting that the Council of the Society might invite Dr. Hermann Goetz to give one or two lectures to the Society. Dr. H. Goetz to be invited to give a lecture to the Society during the winter on any of the following subjects:—

1. Life and Art in the Mughal period (with slides).
2. Eastern Elements in European paintings of the 15th-17th Centuries (with slides).
3. Indo-European Cultural Relations in the Light of European Colonial History.

No. 4.

30-9-36.

LIBRARY—

Library Committee No. 2(a) of 31-3-36. Recommendation by the Philological Secretary for the purchase of a set of the Calcutta Sanskrit Series at a cost of approximately Rs. 100. Accepted by Council.

No. 9.

31-3-36.

Request from the Joint Philological Secretary that the Society may purchase a number of biographical works for the Arabic and Persian Manuscript department, at a total cost of Rs. 65-7-0. Purchase.

No. 13.

31-3-36.

Recommendation Library Committee No. 5(a) of 27-4-36. Subscription Indian Zoological Memoirs, Lucknow. Purchase issues not yet in the Society's Library and place standing order for future issues. Accepted by Council.

No. 7.

27-4-36.

Recommendation Library Committee No. 3 of 24-11-36. That Sir U. N. Brahmachari be co-opted a member of the Committee for the remainder of the year. Accepted by Council.

No. 9.

24-11-36.

LOAN OF MSS.—

Report on manuscripts lent out during the month. Record.

No. 5.

27-1-36.

Applications for loan of manuscripts:—

- (a) Bimalananda Tarkatirtha (Member, A.S.B.) for 'Shivakosha' for three months. Lend the manuscripts against indemnity bond for the value of Rs. 250.
- (b) The Offg. Secretary, Councils of Post-Graduate Teaching in Arts and Science, Calcutta University, for the manuscripts. Lend 'Svaramanjari' and 'Bhattikavya' against indemnity bonds for their value.
- (c) The Registrar, Calcutta University, for Bhartrahari's Vakapadiya. Lend the manuscript against indemnity bond for the value of Rs. 100.

- (d) Librarian, Imperial Library, for Durratut Taj. Lend the manuscript against indemnity bond for the value of Rs.150.
No. 6. 27-1-36.

Applications for loan of manuscripts from:—

- (a) Bombay Branch, Royal Asiatic Society, Persian 'Lama 'atu't-tahirin'. Lend the manuscript against Indemnity Bond to the value of Rs. 700.
(b) R. D. Kabyatirtha for 'Bodhasiddhi' and 'Bodhasiddhiprakasa'. Lend the two manuscripts against the general Indemnity Bond for Rs. 1,000 already executed by him.
(c) The Registrar, University of Madras, Persian Tabaqat-i-Akbar-Shahi (Nos. 115 and 116). Write to the applicant that the manuscript has already been published in the Bibliotheca Indica, if still needed, lend the manuscript against Indemnity Bonds to the value of Rs. 500 and Rs. 600 respectively.
(d) The question of the recovery of the manuscript 'Rasala dar 'Amal-i-rub-i-mujayyab' lent to Dr. Zia-ud-Din Ahmad in May 1929. The General Secretary to look into the matter and report to the next Council meeting. Sir B. L. Mitter to look into the wording of the bond form and to advise the Council.

No. 6.

31-3-36.

Applications for loan of manuscripts from:—

- (a) India Office, London (two Manuscripts). Grant loan.
(b) Curator, Bhandarkar Oriental Research Institute, Poona. (Three manuscripts). May be granted after return of previous MSS.
(c) Secretary, Post-Graduate Department in Arts, Calcutta University (one manuscript). Intimate that local loans of MSS. are no longer granted but that MS. may be consulted in the Society's rooms.
(d) Superintendent, Oriental Publication Bureau, Hyderabad, Deccan (one manuscript). Grant loan, against usual Indemnity bond for a period of three months.

No. 5.

27-4-36.

Applications for extension of the loan of manuscripts for:—

- (a) Six months from B. Bhattacharya, Oriental Institute, Baroda (MS. Ganda Vyuha). Recall, but intimate that the MS. may be applied for anew.
(b) One year from the Curator, Bhandarkar Oriental Research Institute, Poona, (MS. Mahabharata-Tatparyatika-Jnandipika). Recall, but intimate that the MS. may be applied for anew.

No. 4.

27-4-36.

Report on manuscripts lent out during the month. Record.

The General Secretary reported that five members had returned the manuscripts in response to the circular letter issued to all those who had taken manuscripts on loan from the Society, and Dr. Zia-ud-Din Ahmad had not replied.

Resolved: Request the kind offices of Sir B. L. Mitter in the matter of obtaining the manuscript or its price from Dr. Zia-ud-Din Ahmad as soon as he returns from leave.

No. 6.

25-5-36.

Applications for loan of manuscripts.

- (a) India Office Library for 'Yusuf u Zalixa'. Grant loan.
 (b) Vanamali Vedantatirtha, Calcutta, 'Ramayantika Manohara'.
 Unable to comply in view of the last month's Council resolution.

No. 7.

25-5-36.

Request from Ganapati Sircar, Calcutta, to be allowed to extend the period of the loan for a month and a half of 'Chandoga Parisista-tika'.
 Grant.

No. 8.

25-5-36.

Application for loan of manuscripts.

- (a) From Dr. R. C. Majumdar for Canda-kausika (three MSS.).
 Lend against fresh Indemnity bonds to the values of Rs. 100,
 Rs. 25 and Rs. 100 under usual conditions.
 (b) From the Bhandarkar Oriental Research Institute, Poona,
 for Sangitasudhakar by Bhimabhupala. Lend against Indem-
 nity bond to the value of Rs. 300 under usual conditions.

No. 4.

22-6-36.

Application for loan of manuscripts from:

- (a) Prof. B. A. Chaugule, Lingaraj College, Belgaum, for Audarya-
 cintamani manuscript. (Non-member). Reject in view of
 the fact that the applicant is not a member.
 (b) The Bhandarkar Oriental Research Institute, Poona, for
 Kathasaritasagara Manuscript. The Institute be requested
 to return one or two manuscripts which are already with
 them; on receipt of which further MSS. be sent to them on
 loan.
 (c) The India Office Library, London, for Devi Puranam Manus-
 cript. Lend after it has been valued by the Philological
 Secretary.

No. 6.

27-7-36.

Application for the extension of the periods of loan from:—

- (a) The Secretary, Council of Post-Graduate Teaching in Arts,
 Calcutta University, up to January, 1937, of the loan of
 Bhattakavya and Sarvamanjari Manuscripts. Grant.
 (b) Rao Bahadur K. V. Rangaswami Ayyangar, Benares, for three
 months more of the loan of four parts of Krtiyakalpataru
 Manuscripts. Grant.

No. 7.

27-7-36.

Application from Mr. K. C. Chatterjee to be allowed to copy Manus-
 cripts belonging to the Society. The Philological Secretary kindly
 to interview the applicant in connection with the arrears outstanding
 against him; if satisfactorily settled his request be brought up again
 for consideration of Council.

No. 8.

27-7-36.

Applications for loan of manuscripts from:—

- (a) The Principal, Government Sanskrit College, Benares, for
 Jataka Sudhakar. Lend the manuscript under usual
 conditions.
 (b) Dr. S. N. Das-Gupta, Calcutta, for Prakirna Prakasam. The
 General Secretary to use his discretion in the matter.

- (c) Bhandarkar Oriental Research Institute, Poona, for further two manuscripts and for relaxing the restriction of the number of MSS. to be lent out to them. Draw their attention to the three MSS. which are already overdue; on receipt the MSS. may be lent to them under the usual conditions.

No. 6.

30-9-36.

Application from the Bhandarkar Oriental Research Institute, Poona, for the extension of the period of the loan of three manuscripts for a further period of six months. Grant.

No. 5.

24-11-36.

Application from the Librarian, Imperial Library, for the loan of 'Tarikh-e-Herat' manuscript belonging to the Society. Grant.

No. 6.

24-11-36.

Application for the loan of 'Mathnawiyyat-i-Nami' MS. from the Librarian, Punjab University Library, Lahore. Grant against Indemnity bond to the value of Rs. 500.

No. 2.

17-12-36.

MANUSCRIPTS—

Report purchase of manuscripts. Approve.

No. 2.

27-1-36.

Report purchase of Tantra Manuscripts. Approve.

No. 2.

24-2-36.

The question of recovery of the manuscript 'Rasala dar 'Amal-i-rub-i-mujayyab' loaned to Dr. Zia-ud-Din Ahmad. One more letter to be written. If no reply be received within two weeks to be followed by a lawyer's letter.

No. 2.

27-4-36.

Statement of loans of manuscripts outstanding beyond three or more years. Recall all MSS. retained beyond the periods specified in the bonds, taking into account extensions granted, and drawing attention to the regulations regarding the loans of MSS.

Further resolved that a MSS. lending regulations revision committee be formed consisting of Col. Barwell, the two Philological Secretaries and the General Secretary, to draft a set of revised rules to be placed before the next meeting of the Council.

Also resolved that in future residents of Calcutta shall not except for special reasons be permitted to borrow MSS. from the Society's library but shall be permitted to consult them in the Society's rooms.

No. 3.

27-4-36.

Report about the Ica Famulus Camera. Record with thanks.

No. 2.

25-7-36.

The question of making arrangements for photographing manuscripts by the Society's Ica Famulus Camera. Record.

No. 4.

24-11-36.

Permanent loan to the Society of Sanskrit MSS. The General Secretary reported receipt of a letter, dated the 15th November, 1936, from the Department of Education, Health and Lands, conveying the consent of the Government of India to the permanent loan to the Society of the manuscripts in the Archaeological Section, Indian Museum, Calcutta. Record.

No. 14.

24-11-36.

MEETINGS—

Recommendation Finance Committee No. 3 of 23-1-36. Society's Monthly General Meeting Tea expenditure. Recommend that tea be provided to General Meetings and Council Meetings and the cost debited to the Society. Council order: Council subscriptions to be invited to meet expenditure for Council tea. The cost for the General Meeting tea to be debited to the Society.

No. 8.

27-1-36.

The question of having a Monthly Meeting in September. (The Monthly Meeting which was arranged for August had been cancelled owing to the death of Col. Knowles). Meeting to be held; programme of the August meeting to be followed.

No. 9.

25-8-36.

Meeting programme, November Monthly Meeting. The General Secretary to arrange the meeting programme by the inclusion of any suitable items.

No. 15.

30-9-36.

MEMBERSHIP—

List of members in arrears of subscriptions. (23 names altogether). Apply rules.

No. 15.

25-5-36.

Report death of Col. Knowles. Record. Announce in the next Monthly Meeting. An obituary notice to be printed.

No. 3.

25-8-36.

Remittance from Raja K. Deb, Rai Mahasai, who was removed under Rule 38, in 1934, for regularising his membership. The matter to be settled in accordance with the rules in consultation with the Honorary Treasurer.

No. 5.

30-9-36.

Removal of members (absent in Europe for over three years) under Rule 40. (7 names). Apply rules.

No. 12.

24-11-36.

Removal of names under Rule 38. (1) Shiv Bandhu Pande Rs.72; (2) G. T. Sitling Rs.66; (3) J. P. Shukla Rs.72. Apply Rules.

No. 10.

17-12-36.

MEMORIALS—

Appointment of Advisory Board for the Annandale Memorial Medal. The board to consist of Dr. B. S. Guha and the Ex-officio members (Anthropological Secretary, Biological Secretary, Medical Secretary and the General Secretary).

No. 13.

30-9-36.

Recommendations of the Annandale Memorial Medal Advisory Board. Accept.

No. 4.

17-12-36.

MISCELLANEOUS—

Recommendations of the Finance Committee of 23-1-36. Accept with the following modifications. Council subscriptions to be invited to meet expenditure of Council tea. The cost of the General Meeting tea to be debited to the Society.

No. 8.

27-1-36.

Application from Mohammed Yakoob that the Society may kindly let out to him a piece of vacant land on the south-eastern side of the Society's premises for opening an aerated water shop. Reject.

No. 14.

25-5-36.

Letter from the Asst. Private Secretary to H. E. the Governor of Bengal fixing the date for unveiling the portrait of the late Sir C. C. Ghose and asking for a provisional programme. The provisional programme of the ceremony to be as follows:—

- (1) The General Secretary will introduce Mr. D. C. Ghose, brother of the late Sir C. C. Ghose, a past President of the Society, in a few appropriate words.
- (2) Mr. D. C. Ghose will then present the portrait to the Society after a short speech.
- (3) The General Secretary will then receive the portrait formally after thanking Mr. D. C. Ghose, and respectfully request His Excellency to unveil it.
- (4) His Excellency will address the meeting and unveil the portrait.
- (5) Vote of thanks to His Excellency by the General Secretary for kindly unveiling the portrait.

The General Secretary reported that Mr. D. C. Ghose had written to him that His Excellency has accepted Mr. Ghose's invitation to tea with the guests in the rooms of the Society after the unveiling ceremony is over.

Resolved: That the guests should be the resident members of the Society as well as Mr. Ghose's friends and relatives who would be invited by the Council to be present at the unveiling ceremony; Mr. Ghose to make all necessary arrangements for tea including expenses.

No. 5.

25-5-36.

Letter of thanks from the family of the late Sir R. N. Mookerjee. Record.

No. 1.

22-6-36.

Report acceptances to the Society's invitation to the unveiling ceremony of the portrait of the late Sir C. C. Ghose. Record.

No. 4.

27-7-36.

The question of having a name plate at the gate. The General Secretary to arrange.

No. 14.

27-7-36.

Letter of thanks from Dr. B. Sahni for the congratulation sent to him on his being elected a Fellow of the Royal Society. Record.

No. 15.

27-7-36.

Report in the local press about the unveiling ceremony and At Home in the Society's Rooms on August 14th. Record.

No. 1.

25-8-36.

Report about repairs done to the frames containing photographs of all the past Presidents of the Society. Record.

No. 11.

25-8-36.

Letter from the Honorary Secretary, Himalayan Club, enquiring whether the Society would let out a corner room for the use of their club. Unable to rent out the corner room in view of the fact that it may be needed for the Society's own use.

No. 3.

30-9-36.

Letter of thanks from Dr. H. E. Stapleton. Record.
No. 2.

24-11-36.

NATIONAL INSTITUTE OF SCIENCES OF INDIA—

Letter of thanks from the National Institute of Sciences of India.
Record.

No. 1.

27-1-36.

PATRON—

Letter to H. E. the Viceroy inviting him to accept the Patronship of the Society. Await instruction from the President; afterwards write to the Military Secretary to H. E. the Viceroy accordingly.

No. 4.

25-5-36.

Reply to Private Secretary to H. E. the Viceroy regarding the patronage of the Society. Wait for reply from the President.

No. 2.

22-6-36.

Letter of thanks to H. E. the Viceroy for the acceptance by him of office of a Patron of the Society. Record and announce in the Monthly Meeting.

No. 1.

27-7-36.

PROVIDENT FUND—

Recommendation Finance Committee No. 7 of 23-1-36. Application from S. K. Roy for a loan of Rs.250 from the Provident Fund. Grant, to be returned in monthly instalments of Rs. 10 at 3% per annum. Accepted by Council.

No. 8.

27-1-36.

Recommendation Finance Committee No. 8 of 23-1-36. Application from R. K. Iyer for a loan of Rs.250 from the Provident Fund. Grant, to be returned in monthly instalments of Rs.20 at 3% per annum. Accepted by Council.

No. 8.

27-1-36.

Recommendation Finance Committee No. 4(b) of 21-2-36. Application for a loan of Rs.80 from the Provident Fund by B. B. Mukherjee. Grant as far as rules allow, subject to the Honorary Treasurer's approval. Interest at 3% per annum. Accepted by Council.

No. 5.

24-2-36.

Recommendation Finance Committee No. 3 of 24-4-36. Application from K. Krishnamurti to be allowed to join the Society's Provident Fund. Decline. Accepted by Council.

No. 6.

27-4-36.

PUBLICATIONS—

Centenary Volume. Record.

No. 15.

27-1-36.

Letter from the President, Forest Research Institute, Dehra Dun, asking for the supply of the science part of the Journal only and for the corresponding reduction in subscription rates. Reject with appropriate explanation.

No. 5.

31-3-36.

Recommendations of the Publication Committee. Accept. Publish Sayeed-ud-din's paper after having been edited by the Biological Secretary in consultation with Col. Chopra and Mr. Calder.

No. 8. 22-6-36.

Recommendation Publication Committee No. 6 of 24-11-36. That Sir U. N. Brahmachari be co-opted a member of the Publication Committee for the remainder of the year. Accepted by Council.

No. 10. 24-11-36.

REPRESENTATION—

Representation of the Society at a meeting at Government House on March 14th in commemoration of His late Majesty King George V. Record.

No. 1. 31-3-36.

REQUESTS—

Request for the use of the Society's Hall by the Himalayan Club. Approve.

No. 3. 27-1-36.

Request from the Joint Philological Secretary that the Society may purchase a number of biographical works for the Arabic and Persian Manuscript department, at a total cost of Rs.65-7-0. Purchase.

No. 13. 31-3-36.

Request by the Principal, Oriental College, Lahore, to insert an advertisement sheet in the next issue of the Journal. Grant against a nominal charge of Rs.10.

No. 12. 27-4-36.

Request from Ganapati Sircar, Calcutta, to be allowed to extend the period of the loan for a month and a half of 'Chandoga Parisista-tika'. Grant.

No. 8. 25-5-36.

Request for the use of the Society's Committee room for a Committee Meeting of the National Institute of Sciences of India on Saturday, the 27th June, at 5 p.m. Grant.

No. 10. 22-6-36.

Request from the Theosophical University Press, California, to send frequently works relating to Oriental studies published by the Society for reviewing in their 'Forum'. Supply them with price lists of the Society's publication.

No. 11. 22-6-36.

Request for the use of the Society's Lecture Hall by the Mining and Geological Institute of India. Record; General Secretary's action approved.

No. 2. 27-7-36.

Request from Messrs. G. W. Lawrie & Co., Lucknow, to be allowed to photograph two paintings belonging to the Society. Grant on condition that copies are supplied free to the Society and due acknowledgment made in the publication.

No. 3. 27-7-36.

Letter from Dr. Baini Prashad requesting sympathetic consideration of a request from the Field Museum of Natural History. Grant on exchange basis. The Field Museum of Natural History be requested to send us the back numbers of their publications which are lacking in the set, viz.:

- (a) Botanical Series from 1913-1936;
- (b) Zoological Series from 1913-1936;
- (c) Geological Series from 1913-1936;
- (d) Ornithological Series from 1906-1936;

in exchange for the back numbers of the Society's Proceedings and Journal as far as available.

The Field Museum be further requested to continue sending to the Society the above series without any break, in addition to the Anthropological and Report Series which are being received from them in exchange.

No. 5.

27-7-36.

Request for the use of the Society's Committee room and Lecture Hall on August 29th and 30th by the National Institute of Sciences of India. Grant.

No. 5.

25-8-36.

Request for an exchange of the Society's publications with the Trivandrum Sanskrit Series from the Curator, Publication of Oriental Manuscripts, Trivandrum. Exchange the Sanskrit publications of the Society with the Trivandrum Sanskrit Series.

No. 2.

30-9-36.

Request for the use of the Society's Hall by the Mining and Geological Institute of India. Grant.

No. 1.

17-12-36.

ROYAL CHARTER—

Letter from the Under Secretary to the Government of Bengal communicating that His Majesty has been pleased to grant permission to use the title 'Royal' by the Society. Record and announce in the next Monthly Meeting; inform all the members of the change of name; thanks of the Council to be communicated to His Excellency the Governor of Bengal for the kind help rendered by him in this matter, an appropriate letter be sent to the Government of Bengal conveying the thanks of the Society to His Majesty the King Emperor, for this great honour bestowed upon the Society.

No. 2.

25-5-36.

RULES AND REGULATIONS—

Statement of loans of manuscripts outstanding beyond three or more years. Recall all MSS. retained beyond the periods specified in the bonds, taking into accounts extensions granted, and drawing attention to the regulations regarding the loans of MSS.

Further resolved that a MSS. lending regulations revision committee be formed consisting of Col. Barwell, the two Philological Secretaries and the General Secretary, to draft a set of revised rules to be placed before the next meeting of the Council.

Also resolved that in future residents of Calcutta shall not except for special reasons be permitted to borrow MSS. from the Society's library but shall be permitted to consult them in the Society's rooms.

No. 3.

27-4-36.

STAFF—

Recommendation Finance Committee No. 4 of 23-1-36. Application from the Society's staff for the Indian Science Congress Bonus. Decline. Accepted by Council.

No. 8.

27-1-36.

Finance Committee No. 5 of 23-1-36. Remuneration to staff working on holidays. Recommendation: Hold over pending collection of information concerning practices in various offices. Accepted by Council.

No. 8.

27-1-36.

Recommendation Finance Committee No. 3(d) of 16-12-36. Increment of Salaries to Staff. The Honorary Treasurer and the General Secretary to put up the proposals; menials to get their usual increment. Accepted by Council.

No. 6.

17-12-36.

**List of
Patrons,
Officers, Council Members, Members,
Fellows, and Medallists
of the
Royal Asiatic Society of Bengal,
On the 31st December, 1936.**

PATRONS OF THE ROYAL ASIATIC SOCIETY OF BENGAL.

1936	..	.. H.E. the Most Hon'ble the Marquess of Linlithgow, P.C., Kt., G.M.S.I., G.M.I.E., O.B.E., D.L., T.D., Viceroy and Governor-General of India.
1932	..	.. H.E. the Right Honourable Sir John Anderson, P.C., G.C.B., G.C.I.E., Governor of Bengal.
<hr/>		
1910-1916	..	Lord Hardinge of Penshurst, K.G., P.C., G.C.B., G.C.M.G., G.C.S.I., G.C.I.E., G.C.V.O., I.S.O.
1917-1922	..	Marquess of Zetland, P.C., G.C.S.I., G.C.I.E.
1922-1927	..	Earl of Lytton, P.C., G.C.S.I., G.C.I.E.
1926-1931	..	Viscount Halifax, K.G., P.C., G.C.S.I., G.C.I.E.
1927-1932	..	Colonel Sir Francis Stanley Jackson, P.C., G.C.I.E.
1931-1936	..	Earl of Willingdon, G.M.S.I., G.C.M.G., G.M.I.E., G.B.E.

OFFICERS AND MEMBERS OF COUNCIL OF THE ROYAL ASIATIC SOCIETY OF BENGAL DURING THE YEAR 1936.

Elections Annual Meeting.

President

H.E. The Rt. Hon'ble Sir John Anderson, P.C., G.C.B., G.C.I.E.

Vice-Presidents.

Sir David Ezra, Kt., F.Z.S., M.B.O.U.

Rai Sir Upendra Nath Brahmachari Bahadur, Kt., M.A., M.D., Ph.D.,
F.A.S.B.

Lt.-Col. R. Knowles, C.I.E., B.A. (Cantab.), M.R.C.S., L.R.C.P., I.M.S.,
F.A.S.B.

The Hon'ble Sir B. L. Mitter, K.C.S.I., Kt., Barrister-at-Law.

Secretaries and Treasurer

General Secretary :—Johan van Manen, Esq., C.I.E., F.A.S.B.

Treasurer :—S. L. Hora, Esq., D.Sc. (Edin.), F.Z.S., F.R.S.E., F.A.S.B.

Philological Secretary :—S. K. Chatterji, Esq., M.A., D.Lit. (London).

Joint Philological Secretary :—Shamsul 'Ulama Mawlawi M. Hidayat
Hosain, Khan Bahadur, Ph.D., F.A.S.B.

Natural History Secretaries. $\left\{ \begin{array}{l} \text{Biology :—Baini Prashad, Esq., D.Sc., F.Z.S.,} \\ \text{F.R.S.E., F.A.S.B.} \\ \text{Physical Science :—J. N. Mukherjee, Esq., D.Sc.} \\ \text{(Lond.), F.C.S. (Lond.).} \end{array} \right.$

Anthropological Secretary :—Rai Bahadur Ramaprasad Chanda, B.A.,
F.A.S.B.

Medical Secretary :—Lt.-Col. R. N. Chopra, C.I.E., M.A., M.B., I.M.S.,
F.A.S.B.

Library Secretary :—A. M. Heron, Esq., D.Sc. (Edin.), F.G.S., F.R.G.S.,
F.R.S.E.

Other Members of Council.

Percy Brown, Esq., A.R.C.A., F.A.S.B.

C. C. Calder, Esq., B.Sc., F.L.S.

N. G. Majumdar, Esq., M.A.

Lt.-Col. N. Barwell, M.C., M.A., Barrister-at-Law.

K. C. Mahindra, Esq., B.A. (Cantab.).

M. Mahfuz-ul Haq, Esq., M.A.

APPOINTMENTS, TRANSFERS, AND OTHER CHANGES DURING THE YEAR.

Sir U. N. Brahmachari, Acting General Secretary, *vice* Mr. Johan van Manen, absent from 16-5-36 to 16-11-36.

Mr. Percy Brown, Acting Library Secretary, *vice* Dr. A. M. Heron, absent from 1-8-36 to 27-11-36.

Mr. Johan van Manen, Acting Honorary Treasurer, *vice* Dr. S. L. Hora, absent, from 24-1-36 to 7-2-36; from 16-11-36 to 24-11-36 and from 16-12-36 to 31-12-36.

H.E. Sir John Anderson, absent from 8-4-36 to 1-8-36 and from 1-9-36 to 3-11-36.

Sir David Ezra, absent from 16-4-36 to 1-11-36.

Sir B. L. Mitter, absent from 15-4-36 to 14-8-36.

Lt.-Col. R. Knowles, died on 3-8-36.

Dr. B. Prashad, absent from 20-5-36 to 1-7-36.

Dr. J. N. Mukherjee, absent from 19-10-36 to 14-11-36.

Dr. M. H. Hosain, absent from 25-9-36 to 25-10-36.

R.B. R. Chanda, absent from 1-4-36 to 10-5-36.

Bt.-Col. R. N. Chopra, absent from 15-4-36 to 15-8-36.

OFFICERS AND MEMBERS OF COUNCIL OF THE ROYAL ASIATIC SOCIETY OF BENGAL ELECTED FOR THE YEAR 1937.

President.

H.E. The Rt. Hon'ble Sir John Anderson, P.C., G.C.B., G.C.I.E.

Vice-Presidents.

Rai Sir Upendra Nath Brahmachari Bahadur, Kt., M.A., M.D.,
Ph.D., F.R.A.S.B.

A. M. Heron, Esq., D.Sc. (Edin.), F.G.S., F.R.G.S., F.R.S.E.,
F.R.A.S.B.

Percy Brown, Esq., A.R.C.A., F.R.A.S.B.

Lt.-Col. N. Barwell, M.C., M.A., Barrister-at-Law.

Secretaries and Treasurer.

General Secretary :—Johan van Manen, Esq., C.I.E.,
F.R.A.S.B.

Treasurer :—S. L. Hora, Esq., D.Sc. (Edin.), F.Z.S., F.R.S.E.,
F.R.A.S.B.

Philological Secretary :—S. K. Chatterji, Esq., M.A., D.Lit.
(London), F.R.A.S.B.

Joint Philological Secretary :—Shamsu'l 'Ulama Mawlawi
M. Hidayat Hosain, Khan Bahadur, Ph.D., F.R.A.S.B.

Natural History Secretaries. { Biology :—Baini Prashad, Esq., D.Sc., F.Z.S.,
F.R.S.E., F.R.A.S.B.
Physical Science :—J. N. Mukherjee, Esq.,
D.Sc. (Lond.), F.C.S. (Lond.).

Anthropological Secretary :—Rai Bahadur Ramaprasad Chanda,
B.A., F.R.A.S.B.

Medical Secretary :—Bt.-Col. R. N. Chopra, C.I.E., M.A., M.B.,
I.M.S., F.R.A.S.B.

Library Secretary :—M. Mahfuz-ul Haq, Esq., M.A.

Other Members of Council.

C. C. Calder, Esq., B.Sc., F.L.S.

N. G. Majumdar, Esq., M.A., F.R.A.S.B.

K. C. Mahindra, Esq., B.A. (Cantab.).

The Hon'ble Mr. Justice John Lort-Williams, Kt., K.C.

B. S. Guha, Esq., M.A., Ph.D. (Harvard).

W. D. West, Esq., M.A. (Cantab.).

ORDINARY MEMBERS.

R=Resident. N=Non-Resident. F=Foreign. A=Absent. L=Life.

An Asterisk is prefixed to names of Ordinary Fellows of the Society.

Date of Election.		
5-4-22	R	Abdul Ali , ABUL FAIZ MUHAMMAD, M.A., M.R.A.S., F.R.S.L., F.R.G.S., F.R.H.S. 3, Turner Street, Calcutta.
7-3-27	R	Abdul Kadir , A. F. M., M.A. (ALLAHABAD), MAULVIE FAZIL (PUNJAB), MADRASSAH FINAL (CALCUTTA), <i>Professor, Islamia College</i> . 19, Wellesley Square, Calcutta.
2-11-25	N	Acharya , PARAMANANDA, B.S.C., <i>Archæological Scholar</i> . Mayurbhanj State, Baripada.
2-3-21	R	Agharkar , SHANKAR PURUSHOTTAM, M.A., PH.D., F.L.S., <i>Sir Rash Behari Ghose Professor of Botany, Calcutta University</i> . 35, Ballygunge Circular Road, Calcutta.
3-2-36	N	Ahmad , ALFAZUDDIN KHAN BAHADUR, M.A., <i>Retired Assistant Director of Public Instruction, Bengal</i> . Dhalhora, P.O. Tamluk, Midnapur.
1-1-34	N	Ahmad , MIAN JAMAL-UD-DIN, B.A., B.T., <i>Member, Bureau of Education, Afghanistan</i> . 2, Andrabi, Kabul, Afghanistan.
6-6-17	N	Aiyangar , K. V. RANGASWAMI, RAO BAHADUR, M.A., <i>Late Director of Public Instruction, Travancore; Principal, Central Hindu College, Hindu University</i> . Benares.
6-12-26	N	*Aiyangar , S. KRISHNASWAMI, M.A., PH.D., M.R.A.S., F.R.HIST.S., F.R.A.S.B., <i>Rajasevasakta, Professor, University of Madras</i> . "Sripadam", 143, Brodies Road, Mylapore, Madras, S.
1-12-20	N	Akbar Khan , THE HON'BLE MAJOR NAWAB SIR MOHAMMED, K.B.E., C.I.E., <i>Khan of Hoti</i> . Hoti, N.-W.F.P.
6-1-36	R	Anderson , HIS EXCELLENCY THE RT. HON'BLE SIR JOHN, P.C., G.C.B., G.C.I.E., <i>Governor of Bengal</i> . Calcutta.
3-7-12	F	Andrews , EGBERT ARTHUR, B.A. c/o The Royal Empire Society, Northumberland Avenue, London, W.C.
3-3-30	L	Ashton , HUBERT SHORROCK, <i>Merchant</i> . Trueloves, Ingates-ton, Essex, England.
3-9-34	R	Auden , JOHN BICKNELL, M.A. (CANTAB.), F.G.S., <i>Assistant Superintendent, Geological Survey of India</i> . 27, Chow-ringhee, Calcutta.
3-11-30	R	Austin , GEORGE JOHN, <i>Sanitary Engineer, Messrs. J. B. Norton & Sons, Ltd.</i> Norton Building, Lalbazar, Calcutta.
4-4-17	N	Awati , P. R., B.A. (CANTAB.), D.I.C., I.E.S., <i>Professor of Zoology</i> . Royal Institute of Science, Mayo Road, Fort, Bombay.
3-3-14	L	*Bacot , J., F.R.A.S.B. Boulevard Saint-Antoine, 61, Versailles Seine-et-Oise, France.
7-9-36	R	Bagchi , KUMAR NATH, RAI BAHADUR, B.SC., M.B. (CAL.), D.T.M. (CAL. & L'POOL), F.I.C. (LOND.), <i>Chemical Examiner to the Government of Bengal</i> . Medical College, Calcutta.

Date of Election.		
1-11-26	R	Bagchi , PROBODH CHANDRA, M.A., DR.-ES-LETTRES (PARIS), <i>Member of the A.S. of Paris; Lecturer, Calcutta University.</i> 9, Rustomjee Street, Ballygunge, Calcutta.
1-3-26	R	Bagnall , JOHN FREDERICK, B.SC., A.M.I.MECH.E., A.M.I.E.E., A.M.INST.C.E., <i>Consulting Engineer, Messrs. Macneill & Co.</i> 2, Fairlie Place, Calcutta.
2-4-24	N	Bahl , K. N., D.SC., D.PHIL., <i>Professor of Zoology, Lucknow University.</i> Badshabagh, Lucknow.
7-3-27	A	Bake , A. A., <i>Doctorandus Or. Lit.</i> P.O. Santiniketan. (c/o The Kern Institute, Leiden, Holland.)
6-2-18	N	Banerjee , NARENDRA NATH, M.I.P.O.E.E., A.M.I.E., <i>Director of Telegraphs, Bombay Circle, Bombay.</i>
5-3-24	R	Banerjee , P. N., M.A. (CANTAB.), A.M.I.E., F.C.U., <i>Civil Engineer.</i> 12, Mission Row, Calcutta.
1-11-26	N	Barhut , THAKUR KISHORESINGH JI, <i>State Historian of Patiala Government.</i> History and Research Department, Patiala.
3-8-31	N	Barua , THE HON'BLE KANAK LAL, RAI BAHADUR, B.L., F.R.S.E., <i>President, Kamarupa Anusundhan Samiti, Minister to the Government of Assam.</i> Rosaville, Nangthymai, Shillong, Assam.
3-12-23	R	Barwell , N. F., LT.-COL. (RETD.), M.C., M.A., <i>Bar-at-Law.</i> First Floor, 10, Middleton Street, Calcutta (and) Aylmerton House, Aylmerton, Norfolk, England.
4-3-29	R	Basu , THE HON'BLE BEJOY K., C.I.E., M.A., B.L., <i>Solicitor, High Court.</i> 50, Goaltule Road, Bhawanipore, Calcutta.
3-12-24	R	Basu , JATINDRA NATH, M.A., M.L.C., <i>Solicitor.</i> 14, Baloram Ghose Street, Calcutta.
1-3-26	R	Basu , NARENDRA KUMAR, M.L.C., <i>Advocate, High Court.</i> 12, Ashu Biswas Road, Bhawanipore, Calcutta.
2-1-28	R	Basu , NARENDRA MOHAN, M.S.C., <i>Professor of Physiology.</i> 63, Hindusthan Park, Ballygunge, Calcutta.
30-9-35	N	Basu , SATYENDRA KUMAR, M.S.C., <i>Extra Assistant Conservator of Forests.</i> Clover Cot, Darjeeling.
5-2-34	N	Bates , WILLIAM HAYES, <i>Ceramic Engineer, Burn & Co., Ltd.</i> Ranigunj, Dt. Burdwan.
7-7-09	N	Bazaz , RANGNATH KHEMRAJ, <i>Proprietor, Shri Venkateshwar Press.</i> 7th Khetwadi, Bombay No. 4.
7-5-34	R	Bent , WILLIAM ANTONY, <i>Assistant, Messrs. George Henderson & Co., Ltd.</i> 101/1, Clive Street, Calcutta.
4-3-25	R	Benthall , SIR EDWARD C., KT., <i>Merchant.</i> 37, Ballygunge Park, Calcutta.
7-4-09	L	Bentley , CHARLES A., C.I.E., M.B., D.P.H., D.T.M. & H., F.R.A.S.B., <i>Professor of Hygiene.</i> University of Egypt, Cairo.
6-1-36	N	Berkeley-Hill , OWEN ALFRED ROWLAND, M.A., M.D., B.CH. (OXON.), M.R.C.S. (ENGLAND), D.T.M. (LONDON), LT.-COL., I.M.S. (RETD.), 'Station View', Ranchi. B. & O.
4-6-28	N	Bhadra , SATYENDRA NATH, RAI BAHADUR, M.A., <i>Principal, Jagannath Intermediate College.</i> Nayabazar, Dacca.
1-8-17	R	*Bhandarkar , DEVADATTA RAMKRISHNA, M.A., PH.D., F.R.A.S.B., 10, Ritchie Road, Ballygunge, Calcutta.
5-4-26	N	Bhatia , M. L., M.S.O., <i>Lecturer in Zoology.</i> Lucknow University, Lucknow.
1-2-22	N	Bhattacharya , VIDHUSHEKHARA, PANDIT, <i>Principal, Vidyabhavana.</i> Visvabharati, Santiniketan, Birbhum.
7-7-24	L	Bhattacharyya , BINOYTOSH, M.A., PH.D., RAJARATNA, <i>General Editor, Gaekwad's Oriental Series, and Librarian, Oriental Collections, Baroda State.</i> Baroda.

Date of Election.		
2-4-28	R	Bhattacharyya , NIBARAN CHANDRA, M.A., <i>Professor of Physiology, Presidency College</i> . 19, Hindusthan Road, Ballygunge, Calcutta.
4-6-28	N	Bhattachali , NALINI KANTA, M.A., PH.D., <i>Curator, Dacca Museum</i> . Ramna, Dacca.
6-4-31	R	Bhose , JOTISH CHANDER, M.A., B.L., <i>Advocate, Calcutta High Court</i> . 24A, Ray Bagan Street, Calcutta.
5-2-34	N	Bhuyan , SURYYA KUMAR, RAI BAHADUR, M.A., B.L., A.E.S., <i>Honorary Provincial Director of Historical and Antiquarian Studies, Assam; Professor, Cotton College</i> . Gauhati, Assam.
5-3-28	R	Biswas , CHARU CHANDRA, C.I.E., M.A., B.L., <i>Advocate, High Court</i> . 58, Puddopukur Road, P.O. Elgin Road, Calcutta.
1-8-23	L	Biswas , KALIPADA, M.A. Royal Botanic Garden, Sibpur, Howrah.
3-1-27	N	Bivar , HUGH GODFREY STUART, I.C.S., <i>District and Sessions Judge</i> . Murshidabad.
2-12-35	N	Blakiston , J. F., <i>Director-General of Archaeology</i> . New Delhi.
1-2-93	L	*Bodding , REV. P. O., M.A. (CHRIST.), F.R.A.S.B. Gullerasveien 27, Vettakollen, Oslo, Norway.
4-11-35	A	Bor , N. L., M.A., D.S.C., F.L.S., I.F.S. c/o The Conservator of Forests, Shillong, Assam.
6-3-95	R	*Bose , SIR JAGADIS CHANDRA, KT., C.S.I., C.I.E., F.R.S., M.A., D.S.C., F.R.A.S.B. Bose Institute, 91, Upper Circular Road, Calcutta.
6-7-25	R	Bose , MANMATHA MOHAN, M.A., <i>Professor Emeritus, Scottish Church College</i> . 19, Gokul Mitra Lane, Hatkhola, Calcutta.
2-3-31	N	Bose , SUDHANSU KUMAR, B.S.C. (CAL.), A.R.S.M., B.S.C. (MINING) (LONDON), <i>Professor of Mining and Surveying</i> . Indian School of Mines, Dhanbad.
2-11-36	R	Bothra , SUBHKARAN, B.A., <i>Landholder and Student</i> . 3, Vivekananda Road, Calcutta.
4-5-31	A	Bottomley , JOHN MELLOR, B.A. (OXON), I.E.S., <i>Director of Public Instruction, Bengal</i> . 1, Sunny Park, Ballygunge, Calcutta.
5-12-32	N	Boyle , CECIL ALEXANDER, MAJOR, D.S.O., <i>Adviser in Languages and Secretary to the Board of Examiners</i> . Army Headquarters, Simla.
3-12-34	R	Brahmachari , PHANINDRA NATH, M.SC., M.B. 82/3, Cornwallis Street, Calcutta.
1-1-08	L	*Brahmachari , SIR UPENDRA NATH, KT., RAI BAHADUR, M.A., PH.D., M.D., F.S.M.F., F.R.A.S.B. 82/3, Cornwallis Street, Calcutta.
7-11-27	N	Brahmachary , SARAT CHANDRA, RAI BAHADUR, M.A., B.T. Kasba Road, Ballygunge, P.O. Dhakuria, 24-Pergs.
6-1-36	R	Brocke , ALFRED G., D.S.C. (DOCTOR PHILOSOPHÆ NATURALIS) (JENA), <i>Branch Manager, Pharmaceutical Department, 'Bayer'</i> . 11, Store Road, Ballygunge, Calcutta.
3-7-07	L	*Brown , JOHN COGGIN, O.B.E., D.S.C., F.G.S., M.I.M.E., M.INST.M.M., M.I.E., F.R.A.S.B. c/o Messrs. Grindlay & Co., 54, Parliament Street, Westminster, London, S.W.1.
6-10-09	R	*Brown , PERCY, A.R.C.A., F.R.A.S.B., <i>Curator, Victoria Memorial</i> . Calcutta.
8-1-96	F	*Burn , SIR RICHARD, KT., C.S.I., F.R.A.S.B. 9, Staverton Road, Oxford, England.

Date of Election.		
3-12-34	N	Burt , SIR BRYCE CHUDLEIGH, KT., C.I.E., M.B.E., B.SC., I.A.S., <i>Agricultural Expert, Imperial Council of Agricultural Research.</i> 1, York Road, New Delhi.
2-4-13	R	Calder , CHARLES CUMMING, B.SC., F.L.S., <i>Superintendent, Royal Botanic Garden.</i> Sibpur, Howrah.
4-11-29	R	Campbell , SIR GEORGE R., KT., <i>Partner, Messrs. Mackinnon Mackenzie & Co.</i> 16, Strand Road, Calcutta.
7-2-27	R	Captain , DARA MANEKSHAW, <i>Merchant.</i> 1, Corporation Street, Calcutta.
3-2-36	R	Catto , SIR THOMAS S. BART., <i>Merchant and Banker, Andrew Yule & Co., Ltd.</i> 8, Clive Row, Calcutta.
1-9-20	R	Chakladar , HARAN CHANDRA, M.A. 28/4, Srimohan Lane, Kalighat, Calcutta.
7-3-32	R	Chakraborty , KHIRODE BEHARI, <i>Engineer and Manufacturer.</i> 7, Hindusthan Park, P.O. Ballygunge, Calcutta.
4-7-27	R	Chakravarti , CHINTAHARAN, M.A., <i>Lecturer, Bethune College.</i> 28/3, Sahanagar Road, Kalighat, Calcutta.
3-2-30	N	Chakravarti , M. N., M.Sc., A.T.S. 'Gitanjali'. 15, Lodge Road, Lahore.
5-6-33	N	Chakravarti , SUSIL KUMAR, M.A., <i>Zemindar.</i> Cooch Behar (Cooch Behar State).
3-1-27	N	Chakravarty , NIRANJANPRASAD, M.A., PH.D. (CANTAB.), <i>Government Epigraphist.</i> Office of the Government Epigraphist, Ootacamund, Nilgiris, S. India.
6-1-30	A	Chakraverti , SHRISH CHANDRA, B.L., <i>Attorney-at-Law, High Court, Calcutta.</i> 2, Marquis Street, Calcutta.
1-9-20	R	*Chanda , RAMAPRASAD, RAI BAHADUR, B.A., F.R.A.S.B. P. 463, Manoharpukur Road, Kalighat, Calcutta.
3-1-06	L	Chapman , JOHN ALEXANDER, <i>Librarian, Rampur State Library.</i> Rampur.
7-5-28	R	Chatterjea , SIR NALINI RANJAN, KT., M.A., B.L., <i>Retired Judge and sometime acting Chief Justice, Calcutta.</i> 91A, Harish Mukerjee Road, Bhawanipore, Calcutta.
7-2-27	R	Chatterjee , ASHOKE, B.A. (CAL.), B.A. (CANTAB.), <i>Editor, 'Welfare'.</i> 91, Upper Circular Road, Calcutta.
27-10-15	F	Chatterjee , SIR ATUL CHANDRA, K.C.I.E., K.C.S.I., <i>Late High Commissioner for India.</i> Withdean, Cavendish Road, Weybridge, Surrey, England.
2-3-36	R	Chatterjee , MANOMOHAN, B.SC. (CAL.), A.R.C.S., D.I.C., PH.D. (LOND.), <i>Professor of Geology, Presidency College.</i> 170/2, Lower Circular Road, P.O. Entally, Calcutta.
1-10-20	R	Chatterjee , NIRMAL CHANDRA. 52, Haris Mukerjee Road, Bhawanipore, Calcutta.
4-7-27	R	Chatterjee , PATITPABON, M.A., B.L., <i>Vakil, High Court.</i> 84, Harrison Road, Calcutta.
3-12-34	R	Chatterjee , SISIR CHANDRA, M.D. (EDIN.), M.R.C.P. (EDIN.), D.P.H. (EDIN.), <i>Chief Medical Officer, E.B. Ry.</i> 3, Koilaghath Street, Calcutta.
5-1-31	R	Chatterji , DURGACHARAN, M.A., <i>Lecturer in Sanskrit, Bethune College.</i> P. 317, Jatin Das Road, Kalighat, Calcutta.
4-6-34	N	Chatterji , BIJAN RAJ, PH.D. (London), D.LITT. (PUNJAB), <i>Professor of History, Meerut College.</i> Meerut.
7-5-28	R	Chatterji , KEDAR NATH, B.SC. (LONDON), A.E.O.S. (LONDON). 43, Wellesley Street, Calcutta.
7-6-11	R	Chatterji , KARUNA KUMAR, LT.-COL., I.T.F., M.C., V.H.A.S. 6/1, Wood Street, Calcutta.

Date of Election.		
6-8-24	R	*Chatterji, SUNITI KUMAR, M.A. (CAL.), D.LIT. (LONDON), F.R.A.S.B., <i>Khaira Professor of Linguistics, Calcutta University</i> . 'Sudharma', 16, Hindusthan Park, (off Rasbihari Avenue East End), Ballygunge, Calcutta.
2-3-36	R	Chatterji, MRS. TUHINIKĀ, M.A., KĀVYATIRTHA, <i>Research Scholar, Examiner, Calcutta University</i> . 5, Wood Street, Calcutta.
5-11-24	R	Chattopadhyay, K. P., M.SC., <i>Education Officer, Corporation of Calcutta</i> . 55/1, Old Ballygunge 1st Lane, Calcutta.
2-11-25	N	Chattopadhyaya, KSHETRESA CHANDRA, M.A., <i>Lecturer in Sanskrit</i> . Allahabad University, Allahabad.
1-4-14	R	Chaudhuri, GOPAL DAS. 32, Beadon Row, Calcutta.
4-11-35	R	Chaudhuri, SACHINDRA NATH, <i>Barrister-at-Law</i> . 52, Ballygunge Circular Road, Calcutta.
5-12-23	R	Chopra, B. N., D.SC., F.L.S., <i>Assistant Superintendent, Zoological Survey of India</i> . Indian Museum, Calcutta.
1-2-22	R	*Chopra, R. N., C.I.E., M.A., M.D. (CANTAB.), BREVET-COL., I.M.S., F.R.A.S.B., <i>Professor of Pharmacology</i> . School of Tropical Medicine and Hygiene, Chittaranjan Avenue, Calcutta.
5-12-27	L	Chowdhury, SIR CHHAJURAM, KT., C.I.E., M.L.C. 21, Belvedere Road, Calcutta.
2-4-28	R	Chowdhury, RAI JATINDRANATH, <i>Zemindar</i> . 36, Russa Road, Tollygunge, Calcutta.
3-7-07	L	*Christie, WILLIAM ALEXANDER KYNOCH, B.SC., PH.D., M.INST.M.M., F.R.A.S.B. c/o The Lloyds Bank, 6, Pall Mall, London, S. W. 1.
3-11-09	A	*Christophers, SIR SAMUEL RICKARD, KT., C.I.E., O.B.E., F.R.S., F.R.A.S.B., M.B., LT.-COL., I.M.S. 80, Onslow Gardens, South Kensington, London, S.W. 7.
1-9-15	R	Cleghorn, MAUDE LINA WEST (MISS), F.L.S., F.E.S. 43, Moulahat Road, Calcutta.
2-2-31	A	Clough, JOHN, <i>Barrister-at-Law</i> . 17, Store Road, Ballygunge, Calcutta.
5-5-30	F	Cooper, G. A. P. 29, Eccleston Street, Eaton Square, London, S.W. 1.
3-9-34	R	Couchman, BRIGADIER HAROLD JOHN, D.S.O., M.C., <i>Surveyor-General of India</i> . Survey of India, 13, Wood Street, Calcutta.
6-11-33	R	Coulson, ARTHUR LENNOX, D.SC. (MELB.), D.I.C., F.G.S. <i>Geological Survey of India</i> , 27, Chowringhee, Calcutta.
4-11-29	L	*Cotter, GERALD DE PURCELL, B.A., SC.D. (DUBLIN), M.INST.M.M., F.G.S., F.R.A.S.B. 'Fallowfield', Manor Road, Penn., Bucks., England.
5-3-34	R	Craddock, SIR WALTER MERRY, KT., D.S.O., COLONEL, M.C., <i>Stock Broker</i> . Bengal Club, Calcutta.
25-8-87	R	Criper, WILLIAM RISDON, F.C.S., F.I.C., A.R.S.M. Konnagar.
2-11-25	A	Crookshank, HENRY, B.A., B.A.I. (DUBLIN), <i>Assistant Superintendent, Geological Survey of India</i> . 27, Chowringhee, Calcutta.
7-12-36	R	Daga, MADANGOPAL, <i>Merchant and Landlord</i> . 374, Upper Chitpore Road, Calcutta.
7-3-32	R	Darbari, M. D., <i>Incorporated Accountant, S.B. Billimoria & Co., Ltd.</i> 100, Clive Street, Calcutta.
4-3-25	R	Das, AJIT NATH, RAI BAHADUR, M.R.A.S., F.Z.S., <i>Zemindar</i> . 24, South Road, Entally, Calcutta.

Date of Election.		
3-12-24	R	Das, SURENDRA NATH, M.B., <i>Medical Practitioner.</i> 67, Nimtala Ghat Street, Calcutta.
6-9-22	R	Das-Gupta, SURENDRA NATH, M.A., PH.D., I.E.S., <i>Principal, Sanskrit College.</i> 1, College Square, Calcutta.
1-3-26	R	Datta, HIRENDRA NATH, M.A., B.L., <i>Solicitor, High Court.</i> 139, Cornwallis Street, Calcutta.
3-6-25	N	Datta, S. K., B.A., M.B., CH.B. (EDIN.), <i>Principal, Forman Christian College.</i> Lahore.
4-6-34	R	Daver, NANABHOY SORABJI, B.A. (HONS.), <i>Mercantile.</i> c/o Parke, Davis & Co., 5, Dhurumtollah Street, Calcutta.
6-8-24	L	Davies, L. M., LT.-COL., LATE R.A., M.A., FR.S.E., F.R.A.I., F.G.S. 8, Garscube Terrace, Murrayfield, Edinburgh, 12, Scotland.
4-3-29	R	De, J. C., M.B., LT.-COL., I.M.S., <i>Superintendent, Campbell Medical School.</i> 135, Lower Circular Road, Calcutta.
19-9-95	L	De, KIRAN CHANDRA, C.I.E., B.A., I.C.S. (RETD.), <i>Manager, Nawab Bahadur of Murshidabad Estate.</i> Lalbagh, Murshidabad.
5-12-32	N	Deb, SUSHIL KUMAR, B.A. Sheikghat, P.O. Sylhet, Dt. Assam.
5-12-27	L	Dechhen, H.H. MAHARANI KUNZANG, <i>Maharani of Sikkim.</i> Gangtok, Sikkim.
5-5-30	N	Deo, SIR PRATAP CHANDRA BHANJ, K.C.I.E., <i>Maharajah, Ruler of Mayurbhanj State.</i> P.O. Baripada, Mayurbhanj, B.N.R.
5-11-34	R	Dey, MUKUL, A.R.C.A. (LOND.), M.C.S.E. (U.S.A.), F.R.S.A., etc., <i>Principal, Govt. School of Art; Officer in charge, Art Section; Keeper of Govt. Art Gallery; Trustee, Indian Museum.</i> 28, Chowringhee, Calcutta.
4-5-10	L	Dhavlé, THE HON'BLE MR. JUSTICE SHANKAR BALAJI, B.A., I.C.S., <i>Judge, Patna High Court.</i> Patna.
4-8-20	N	Dikshit, KASHINATH NARAYAN, M.A. c/o The Office of the Director-General of Archaeology, New Delhi.
5-1-98	R	Dods, WILLIAM KANE, Agent, Hongkong and Shanghai Banking Corporation. 6, Minto Park, Alipur, Calcutta.
2-2-31	A	Douglas, GORDON WATSON, B.SC., D.L.M., <i>State Chemist to the Government of Bhopal.</i> State Laboratory, Bhopal, Central India.
2-7-02	L	Doxey, FREDERICK. 'Ballygunge', Cooden Drive, Bexhill-on-Sea, Sussex, England.
7-11-32	R	Driver, DARAB CURSETJI, M.A. (CANTAB.), <i>Barrister-at-Law, Constituted Attorney to Messrs. Tata & Sons, Ltd., Managing Agents for The Tata Iron & Steel Co., Ltd.</i> 71/73, Park Street, Calcutta.
7-5-34	R	Duncan, PERCIVAL CAIRNCROSS, <i>Mercantile Assistant with Messrs. George Henderson & Co., Ltd.</i> 101/1, Clive Street, Calcutta.
1-7-29	A	Dunn, JOHN ALEXANDER, D.SC., D.I.C., F.G.S., <i>Assistant Superintendent, Geological Survey of India.</i> 27, Chowringhee, Calcutta.
2-1-33	N	Dutch, ROBERT AUSTEN, B.A. (CANTAB.), I.C.S., <i>District Magistrate.</i> Noakhali.
3-7-33	A	Dutt, GURU SADAY, <i>Barrister-at-Law, I.C.S.</i> 12, Loudon Street, Calcutta.
30-9-35	R	Dutt, MOHENDRA NATH, L.E., <i>Consulting Engineer.</i> 12, Kailas Bose Lane, Howrah.
5-12-32	R	Dutt, NALINAKSHA, M.A., PH.D., D.LITT. (LOND.), <i>Lecturer, Calcutta University.</i> 91-1B, Manicktollah Street, Calcutta.

Date of Election.		
5-3-28	A	Eberl, OTTO, DR. JUR., <i>Late Vice-Consul for Germany.</i> 2, Store Road, Ballygunge, Calcutta.
4-11-29	R	Edwards, L. BROOKE, <i>Manager in India, The Baldwin Loco. Works of Philadelphia, U.S.A.</i> 5, Dalhousie Square, Calcutta.
5-1-31	L	Evans, PERCY, B.A. (CANTAB.), F.G.S., <i>Geologist.</i> c/o The Burma Oil Co., Digboi, Assam.
6-2-28	L	Ezra, SIR DAVID, KT., F.Z.S., M.B.O.U. 3, Kyd Street, Calcutta.
2-12-29	N	Fawcus, LOUIS REGINALD, B.A. (CANTAB.), <i>Indian Civil Service, Magistrate and Collector.</i> Dacca.
3-8-04	L	*Fermor, SIR LEWIS LEIGH, KT., O.B.E., M.INST.M.M., D.SC., A.R.S.M., F.G.S., F.R.S., F.R.A.S.B., <i>Director, Geological Survey of India.</i> 27, Chowringhee, Calcutta.
31-10-06	F	Finlow, ROBERT STEEL, C.I.E., B.S.C., F.I.C., <i>Late Director of Agriculture, Bengal.</i> c/o Messrs. Grindlay & Co., Ltd., 54, Parliament Street, London, S.W. 1.
3-2-36	R	Flury, ERNEST CHARLES, <i>Merchant, Manager of Messrs. Volkart Brothers.</i> 11, Clive Street (Post Box No. 606), Calcutta.
5-11-13	R	Fox, CYRIL S., D.SC. (BIRM.), M.I.M.E., F.G.S. <i>Geologica Survey of India,</i> 27, Chowringhee, Calcutta.
7-3-27	F	Fukushima, NAOSHIRO. 33, Hikawacho, Akasaka, Tokyo, Japan.
5-11-28	R	Galstaun, JOHN CARAPIET, O.B.E., <i>Merchant and Landholder.</i> 234/4, Lower Circular Road, Calcutta.
1-11-26	R	Galstaun, SHANAZAN, M.A., D.M.R.E., M.R.C.S., L.R.C.P., <i>Medical Practitioner, Radiologist, Medical College Hospital.</i> 39, Theatre Road, Calcutta.
6-10-09	R	*Gangoly, ORDHENDRA COOMAR, B.A., F.R.A.S.B. 2, Asutosh Mukherjee Road, Calcutta.
7-9-36	R	Gangooly, PHANINDRA LAL, M.A., <i>Lecturer in Mathematics, Calcutta University.</i> P-507, Rash Behari Avenue, Calcutta.
5-11-34	R	Gee, EDWARD ROWLAND, M.A. (CANTAB.), F.G.S., <i>Assistant Superintendent, Geological Survey of India.</i> 27, Chowringhee, Calcutta.
2-1-33	R	George, JAMES, B.A. (CANTAB.), I.C.S., <i>Special Officer, Political Department, Govt. of Bengal.</i> United Service Club, Calcutta.
6-2-33	L	Ghatak, JYOTISH CHANDRA, M.A. (TRIPLE), SAHITYA SARASWATI, JYOTISH-SAGARA, <i>Professor.</i> 4, Boloram Bose Ghat Road, Bhawanipore, Calcutta.
7-5-28	R	Ghosal, UPENDRA NATH, M.A., PH.D., <i>Professor of History, Presidency College.</i> 12, Badur Bagan Row, Calcutta.
5-4-26	R	Ghose, BIMAL CHANDRA, <i>Barrister-at-Law.</i> 27/1, Harish Mukherjee Road, Calcutta.
1-4-29	R	Ghose, DEB PROSONNO, <i>Zemindar.</i> 75, Beadon Street, Calcutta.
7-1-29	R	Ghose, THE HON'BLE MR. JUSTICE MOHIM CHANDRA, B.A. (CAL.), M.A. (CANTAB.), I.C.S., <i>Barrister-at-Law (Inner Temple), Judge, High Court.</i> 4A, Little Russell Street, Calcutta.
3-12-24	R	Ghose, SUSHIL CHANDRA, B.A., <i>Deputy Magistrate.</i> 1, Sikdarbagan Street, Calcutta.

Date of Election.		
2-4-24	R	Ghosh, K. , D.T.M., D.P.H. (CANTAB.), L.M.S., <i>Medical Practitioner</i> . 45, Creek Row, Calcutta.
7-3-27	R	Ghosh, PHANINDRA NATH , M.A., PH.D., SC.D. (PADUA), F.INST.P., <i>Sir Rashbehary Ghosh Professor of Applied Physics, University of Calcutta</i> . 92, Upper Circular Road, Calcutta.
4-9-12	R	Ghosh, TARAPADA , <i>Zemindar</i> . 14, Paddapukur Street, Kidderpore, Calcutta.
1-2-26	R	Ghuznavi, SIR ABDUL HALIM , KT., M.L.A., <i>Zemindar</i> . 18, Canal Street, Entally, Calcutta.
6-8-28	R	Ghuznavi, ISKANDER S. K. , <i>Zemindar and Member, Advisory Board of Industries, Government of Bengal</i> . 45, Jhowtolla Road, Calcutta (and) Dilduar, Mymensingh.
1-2-26	R	Ghuznavi, ALHADJ SIR ABDELKERIM ABU AHMED KHAN , KT., M.L.C., <i>Zemindar of Dilduar</i> . 45, Jhowtolla Road, Calcutta (and) North House, Dilduar, Mymensingh.
3-12-34	R	Gladstone, JOHN , <i>Assistant, Messrs. Gillanders Arbuthnot & Co., Ltd.</i> 3, Clive Street, Calcutta.
5-3-28	R	Gooptu, DWIJENDRA NATH , <i>Medical Practitioner and Landholder</i> . 5, Middleton Street, Calcutta.
7-9-10	N	*Gravelly, FREDERIC HENRY , D.SC., F.R.A.S.B. Museum House, Egmore, Madras.
5-12-00	L	Grieve, JAMES WYNDHAM ALLEYNE . c/o Messrs. Coutts & Co., 440, Strand, London, W.C. 2.
4-3-35	R	Groth, EDWARD M. , <i>American Consul</i> . American Consulate General, 9, Esplanade Mansions, Esplanade, Calcutta.
4-2-25	R	Guha, B. S. , M.A., PH.D. (HARVARD). Indian Museum, Calcutta.
6-12-26	R	Guha, THE HON'BLE MR. JUSTICE SURENDRANATH, RAI BAHADUR , <i>Judge, High Court</i> . 20, Lansdowne Road, Calcutta.
5-3-19	N	Gupta, SIVAPRASAD . Seva Upavana, Benares City.
5-8-15	R	Gurner, CYRIL WALTER , B.A. (OXON), I.C.S., <i>Chairman, Improvement Trust</i> . 4, Theatre Road, Calcutta.
5-2-34	R	Haldar, BHARATI VIKAS , M.A., B.L., <i>Advocate, High Court</i> . 47, Haldarpara Road, Kalighat, Calcutta.
6-1-30	R	Haldar, SUDHINDRA KUMAR , M.A., I.C.S., <i>Commissioner of Excise and Salt, Bengal</i> . 241, Lower Circular Road, Calcutta.
6-1-30	F	Hamilton, SIR DANIEL MACKINNON , KT., <i>Retired Partner, Messrs. Mackinnon Mackenzie & Co.</i> Balmacara, Rosshire, Scotland.
2-4-24	R	Haq, M. MAHFUZ-UL , M.A., <i>Lecturer, Presidency College</i> . 8/B, Dargah Road, Park Circus, Calcutta.
1-5-12	R	Harley, ALEXANDER HAMILTON , M.A., I.E.S., <i>Principal, Islamia College</i> . 19, Wellesley Square, Calcutta.
1-2-26	F	Harris, H. G. c/o Messrs. Martin & Harris, Ltd., Rowlette Buildings, 17, Prinsep Street, Calcutta.
2-4-28	R	Harris, LAWRENCE ERNEST , <i>Engineer, Manager for India, Messrs. Sulzer Brothers</i> . 4, Lyons Range, Calcutta.
5-11-19	N	Hemraj, MANYABARA RAJ GURU , C.I.E., PANDITJI. Dhokatole, Nepal.
3-2-30	F	Henderson, ALEXANDER GAVIN , B.A. (OXON). Buscot Park, Faringdon, Berks, England.
6-3-28	R	*Heron, A. M. , D.SC. (EDIN.), F.G.S., F.R.G.S., F.R.S.E., F.R.A.S.B., <i>Superintendent, Geological Survey of India</i> . 27, Chowringhee, Calcutta.

Date of Election.		
7-6-11	L	*Hidāyat Hosain , MUHAMMAD, SHAMS 'UL-'ULAMA, KHAN BAHADUR, PH.D., F.R.A.S.B. 96/2c, Collin Street, Calcutta.
1-2-26	A	Hingston, H. , LT.-COL., I.M.S., M.D., <i>Late Surgeon to H.E. the Governor of Bengal.</i> England.
4-11-35	R	Hirtzel , MICHAEL ARTHUR FREDERICK, B.A. (TRINITY COLLEGE, OXFORD), <i>Mercantile Assistant, Macneill & Co.</i> 2, Fairlie Place, Calcutta.
1-4-25	R	Hobbs , HENRY, MAJOR, V.D., <i>Merchant.</i> 9, Old Court House Street, Calcutta.
1-2-32	R	Holme , JAMES WILLIAM, M.A., I.E.S. (RETD.), <i>Principal, La Martinière.</i> 11, Loudon Street, Calcutta.
7-3-27	N	Hopkinson , ARTHUR JOHN, I.C.S., <i>Secretary to the Government, N. W.F. Province.</i> Peshawar, N.-W.F.P.
2-11-21	L	*Hora , SUNDER LAL, D.SC., F.Z.S., F.R.S.E., F.R.A.S.B. Zoological Survey of India, Indian Museum, Calcutta.
5-11-34	R	Hosain , PRINCE AFSARUL MULUK MIRZA MUHAMMED AKRAM, BAHADUR, <i>Political Pensioner and Landholder.</i> Afsar Manzil, 20, Ballygunge Circular Road, Calcutta.
6-6-23	L	*Howard , SIR ALBERT, KT., C.I.E., M.A., F.R.A.S.B., <i>Late Director, Institute of Plant Industry, Indore, and Late Agricultural Adviser to States in Central India.</i> 14, Liskeard Gardens, Blackheath, London, S.E. 3.
2-9-35	N	Howland , FELIX, <i>Professor of English.</i> Habibia College, Kabul, Afghanistan.
7-3-32	N	Hughes , ARTHUR, B.A. (MANCHESTER), <i>Indian Civil Service, Magistrate and Collector,</i> Murshidabad, Bengal.
4-5-36	N	Husain , SYED ASAF, M.A., LL.B., <i>Lawyer.</i> 3, Old Court Road, Lucknow.
6-8-34	N	Husain , SYED ATA, M.A. (CAL.), C.E. (ROORKEE), <i>Retired Superintending Engineer, Hyderabad State.</i> Mohalla Lingumpally, Hyderabad, Deccan.
6-6-23	N	*Hutton , J. H., C.I.E., I.C.S., M.A., D.SC., F.R.A.S.B. Nowgong, Assam.
1-2-11	L	Insch , JAMES. 18, Beechwood Avenue, Boscombe, Hants, England.
4-3-35	R	Jack , THE HON'BLE MR. JUSTICE ROBERT ERNEST, I.C.S., <i>Judge, High Court.</i> United Service Club, Calcutta.
4-2-35	N	Jaffar , S. M., B.A., <i>Author, Translator to the Judicial Commissioner, North-West Frontier Province.</i> 1508, Khudadad Street, Peshawar City, N.-W.F.P.
6-6-27	L	Jain , BALDEODAS, <i>Merchant and Banker.</i> 21, Armenian Street, Calcutta.
2-2-21	R	Jain , CHHOTU LAL, M.R.A.S. 25, Central Avenue North, Calcutta.
6-1-30	N	Jain , NIRMAL KUMAR. Devashrama, Arrah.
6-8-28	N	Jaitly , P. L., <i>Electrical Engineer, Merchant.</i> 15, Canning Road, Allahabad.
1-11-26	F	Jameson , THOMAS BLANDFORD, MAJOR, M.C., M.A. (CANTAB.), I.C.S. Claremont, Kingskerswell, S. Devon, England.
6-5-25	R	Jatia , SIR ONKAR MULL, KT., O.B.E., <i>Merchant.</i> 2, Rupchand Roy Street, Calcutta.
4-2-29	R	Jenkins , WALTER ALLEN, D.SC. (SHEFFIELD), I.E.S., <i>Principal, David Hare Training College.</i> United Service Club, Calcutta.

Date of Election.		
1-11-11	L	Kamaluddin AHMAD , SHAMS-UL-'ULAMĀ, M.A., I.E.S., <i>Principal, Krishnagar College, Krishnagar Nadia.</i>
6-11-33	R	Kavyatirtha , RAM DHAN, <i>Pundit.</i> 55, Surendranath Banerjee Road, Calcutta.
4-5-10	L	*Kemp , STANLEY W., B.A., D.SC., F.R.S., F.R.A.S.B. 'Discovery Expedition', 52, Queen Anne Chambers, Dean Farrar Street, London, S.W. 1.
2-5-30	N	Kenny , DICK EDWARD COURTENAY, LT.-COL., I.A., <i>Deputy Commissioner, Tavoy.</i> Burma.
2-12-29	N	Khan , MATIUR RAHMAN, <i>Khas Mahal Circle Officer.</i> 27, Panchbhaighat, Dacca.
3-12-24	R	Khan , REZAUR RAHMAN, M.A., B.L., <i>Deputy President, Bengal Legislative Council.</i> 28, Convent Road, Entally, Calcutta.
6-5-25	R	Khanna , VINAYEK LAL, M.R.A.S., <i>Merchant.</i> 137F, Balaram Dey Street, Beadon Street P.O., Calcutta.
2-8-26	R	Khettry , BENIMADHO, <i>Proprietor, Messrs. Gouri Shanker Khetry, Landholders, Bankers and Merchants.</i> 15, Paggiyapatti, Barabazar, Calcutta.
2-11-25	F	Kimura , R. (Ko-Shi), <i>Principal, College Department of Rissko University.</i> Osaki Machi, Tokyo, Japan.
5-2-34	N	Kirby , WALTER, B.SC., <i>Inspector of Mines in India</i> Dhanbad, E.I.R.
4-11-35	R	Klebe , ANINA, née BRANDT, PH.D. (GREIFSWALD, GERMANY), <i>Psychologist.</i> 14/1, Sudder Street, Calcutta.
1-3-26	R	Kramisch , STELLA (MRS.), PH.D., <i>Lecturer in Ancient Indian History (Fine Arts), Calcutta University.</i> 57, Ballygunge Circular Road, Calcutta.
3-9-34	R	Krishnan , K. S., D.SC., <i>Mahendralal Sircar Professor of Physics, Indian Association for the Cultivation of Science.</i> 210, Bowbazar Street, Calcutta.
6-11-33	A	Krishnan , M. S., M.A. (MADRAS), PH.D. (LOND.), A.R.C.S., D.I.C. (LOND.), <i>Assistant Superintendent, Geological Survey of India.</i> 27, Chowringhee, Calcutta.
2-4-28	R	Kumar , KUMAR KRISHNA, M.A., B.L., <i>Zemindar and Banker.</i> 31 & 31-1, Burtolla Street, Calcutta.
7-3-23	R	Labey , GEORGE THOMAS, M.C., <i>Bengal Pilot Service.</i> United Service Club, Calcutta.
4-2-35	R	Lal , RAM BIHARI, M.B., B.S., D.P.H., D.T.M. & H., D.B., <i>Professor of Vital Statistics and Epidemiology, All-India Institute of Hygiene and Public Health.</i> 21, Chittaranjan Avenue, Calcutta.
6-3-89	L	*La Touche , THOMAS HENRY DIGGES, M.A., F.G.S., F.R.A.S.B. 230, Hills Road, Cambridge, England.
5-2-34	R	Law , BHABANI CHURN, <i>Merchant, Zamindar and Artist.</i> 223, Cornwallis Street, Calcutta.
5-8-14	L	LAW , BIMALA CHARAN, M.A., B.L., PH.D., F.R.HIST.S. 43, Kailas Bose Street, Calcutta.
1-2-11	R	LAW , NARENDRA NATH, M.A., B.L., PH.D. 96, Amheret Street, Calcutta.
4-2-35	R	LAW , PARBUTTY CHURN. 223, Cornwallis Street, Calcutta.
1-7-14	R	LAW , SATYA CHURN, M.A., B.L., PH.D., F.Z.S., M.B.O.U. 50, Kailas Bose Street, Calcutta.
3-9-34	R	Ledrus , MICHAEL, <i>Professor in Divinity, Lecturer at the Gregorian University, Rome; Member of the Society of Jesus, Editor, 'The New Review'.</i> St. Xavier's College, 30, Park Street, Calcutta.

Date of Election.		
7-6-26	R	Lemmon, RICHARD DENNIS , <i>Merchant</i> . c/o Messrs. Martin & Harris Ltd., 17, Prinsep Street, Calcutta.
1-6-31	R	Lort-Williams, THE HON'BLE MR. JUSTICE JOHN , K.C., <i>Barrister-at-Law, Judge, High Court</i> . 227/1, Lower Circular Road, Calcutta.
5-7-26	A	Lyne, HOWARD WILLIAM , I.C.S. Khulna, E.B.R.
2-8-05	L	*McCay, DAVID , LT.-COL., I.M.S., M.D., B.CH., B.A.O., M.R.C.P., F.R.A.S.B. c/o The Standard Bank of S. Africa, Cradock, Cape Province, S. Africa.
1-3-26	R	McKay, JOHN WALLACE . c/o Messrs. Duncan Bros. & Co., Ltd., 101, Clive Street, Calcutta.
11-1-03	L	*MacLagan, SIR EDWARD DOUGLAS , K.C.S.I., K.C.I.E., F.R.A.S.B. 39, Egerton Terrace, London, S.W. 3.
5-3-24	R	McPherson, JAMES . c/o Messrs. Begg Dunlop & Co., Ltd., 2, Hare Street, Calcutta.
7-6-16	N	Mahajan, SURYA PRASAD . Murarpur, Gaya.
3-3-20	R	Mahalanobis, P. C. , M.A., B.SC., I.E.S., <i>Professor, Presidency College</i> . 210, Cornwallis Street, Calcutta.
1-3-11	R	Mahab, SIR BIJAY CHAND , K.C.S.I., I.O.M., MAHARAJA-DHIRAJA BAHADUR OF BURDWAN. 6, Alipur Lane, Calcutta.
3-2-30	N	Mahtab, UDAY CHAND , B.A., <i>Maharaj Kumar of Burdwan</i> . The Palace, Burdwan.
6-2-24	R	Mahindra, K. C. , B.A. (CANTAB.). Messrs. Martin & Co., 12, Mission Row, Calcutta.
9-6-20	R	*Majumdar, NANI GOPAL , M.A., F.R.A.S.B. <i>Archæological Survey of India, Indian Museum, Calcutta</i> .
2-2-16	R	Majumdar, NARENDRA KUMAR , M.A., <i>Professor, Calcutta University</i> . 3, Government Place, West, Calcutta.
4-6-13	N	Majumdar, RAMESH CHANDRA , M.A., PH.D., <i>Professor, Dacca University</i> . Ramna, Dacca.
5-5-30	A	Mallam, G. L. , CAPTAIN, I.A., <i>Census Superintendent</i> . Peshawar, N.-W.F.P.
4-11-26	R	Mallya, BANTWAL GANAPATHY , MAJOR, I.M.S., F.R.C.S.E. <i>Civil Surgeon</i> . Howrah.
7-9-36	N	Mandhata, H. C. , M.A. (ALLAHABAD), <i>Teacher, formerly Lecturer in History, Agra College</i> . Ghaziabad, Meerut.
6-2-18	L	*Manen, JOHAN VAN , C.I.E., <i>Officier de l'Instruction Publique</i> , F.R.A.S.B. 6, Temple Chambers, 6, Old Post Office Street, Calcutta.
5-6-01	F	Mann, HAROLD HART , D.SC., M.SC., F.I.C., F.L.S. <i>Woburn Experimental Station, Aspley Guise, Bedfordshire, England</i> .
6-1-30	N	Martin, M. F. C. , CAPT., R.E. c/o The Garrison Engineer, Mingladon, Burma.
5-5-30	A	Matthias, OWEN GARDINER , <i>Managing Director, Messrs. Smith Stanistreet & Co., Ltd.</i> Stanistreet House, 18, Convent Road, Entally, Calcutta.
2-1-28	N	Mello, FROILANO DE , COLONEL, <i>Director-General of Medical Services in Portuguese India, Professor of Parasitology</i> . Nova Gôa.
5-11-84	L	*Middlemiss, CHARLES STEWART , C.I.E., F.R.S., B.A., F.G.S., F.R.A.S.B. <i>Aviemore, Crowborough, Sussex, England</i> .
1-2-26	N	*Mills, JAMES PHILIP , I.C.S., M.A. (OXON), J.P., F.R.A.S.B., <i>Deputy Commissioner</i> . Kohima Naga Hills, Assam.
5-6-12	N	Misra, CHAMPA RAM , B.A., RAI BAHADUR, PANDIT, <i>Diwan, Chhatarpur State</i> . Bundelkhand, C.I.

Date of Election.		
2-4-24	R	Mitra, J. C., M.A., B.L., <i>Retired Accountant-General, Bengal.</i> 1, Abinash Mitter Lane, Calcutta.
5-3-24	R	Mitter, THE HON'BLE SIR B. L., K.C.S.I., M.A., B.L., <i>Barrister-at-Law, Member, Bengal Executive Council.</i> 5, Outram Street, Calcutta.
5-3-24	R	Mitter, THE HON'BLE MR. JUSTICE DWARKANATH, M.A., D.L., <i>Judge, High Court.</i> 12, Theatre Road, Calcutta.
4-3-29	R	Mitter, HIRANYA KUMAR, <i>Landholder.</i> 1, Jhamapukur Lane, Amherst Street P.O., Calcutta.
5-4-26	R	Mitter, KHAGENDRA NATH, RAI BAHADUR, M.A., <i>Professor, Presidency College (Retired).</i> 72/1, Bondel Road, Ballygunge, Calcutta.
30-9-35	R	Mitter, SUDHIR CHUNDER, <i>Barrister-at-Law.</i> 19, Camac Street, Calcutta.
1-11-26	R	Modi, JAL R. K., B.A. 4, Camac Street, Calcutta.
5-3-34	R	Modi, JEHangIR JEEVANJI JAMSHEDJI, <i>Merchant.</i> 5, Dhurrumtollah Street, Calcutta.
6-8-24	N	Moloney, WILLIAM J., <i>General Manager of Reuter's for the East.</i> c/o 26/7, Dalhousie Square, Calcutta.
5-11-24	R	Mookerjee, B. N., B.A. (CANTAB.), <i>Engineer.</i> 12, Mission Row, Calcutta.
2-7-24	R	Mookerjee, SYAMA PRASAD, M.A., B.L., <i>Vakil, High Court, Vice-Chancellor, Calcutta University.</i> 77, Russa Road North, Calcutta.
2-2-21	R	Mukerjee, SUBODH CHANDRA, SHASTRI, M.A., DOCTEUR-ES-LETTRES (PARIS). 3/1A, Raja Rajabullav Street, Calcutta.
5-12-27	R	Mukerjee, SUSIL KUMAR, F.R.C.S. (EDIN.), D.O. (OXON), D.O.M.S. (LOND.), <i>Ophthalmic Surgeon, Carmichael Medical College Hospitals.</i> 1/1, Wood Street, Calcutta.
6-2-28	R	Mukerji, THE HON'BLE MR. JUSTICE MANMATHA NATH, KT., M.A., B.L., <i>Judge, High Court.</i> 8/1, Harsi Street, Calcutta.
3-3-30	N	Mukharji, ISAN CHANDRA, <i>Rai Bahadur, Tazimi Sardar and Retired Member of Jaipur Council.</i> Jaipur, Rajputana.
7-11-27	N	Mukherjee, DEVAPROSANNA, M.A., B.L., <i>Zemindar.</i> Burdwan.
2-8-26	R	Mukherjee, JNANENDRA NATH, D.SC. (LONDON), F.C.S. (LONDON), <i>Fellow of the Indian Chemical Society; Khaira Professor of Chemistry, University of Calcutta.</i> 92, Upper Circular Road, Calcutta.
5-7-26	R	Mukhopadhyaya, PRABHAT KUMAR, M.A., <i>Research Assistant, Calcutta University.</i> 27, Govinda Ghosal Lane, Bhawanipore, Calcutta.
2-2-21	R	Mukhopadhyaya, RAMAPRASAD, M.A., B.L. 77, Russa Road North, Bhawanipore, Calcutta.
2-4-28	R	Mullick, KARTICK CHURN, KUMAR, <i>Director, Raja D. N. Mullick & Sons, Ltd.</i> Colootola Rajbati, Chittaranjan Avenue, Calcutta.
6-8-34	R	Mullick, MANICK LALL, <i>Landholder; Honorary Magistrate, Sealdah.</i> 123, Grey Street, Calcutta.
4-3-29	R	Mullick, PRAMATHA NATH, RAI BAHADUR, <i>Zemindar and Landholder.</i> 129, Cornwallis Street, Calcutta.
7-5-28	N	Murray, EUGENE FLORIAN OLIPHANT, A.I.M.M., F.G.S., <i>Mining Geologist and Engineer.</i> Tatanagar, B.N.Ry.
5-12-27	L	Namgyal, H.H. MAHARAJA SIR TASHI, K.O.I.F., <i>Maharaja of Sikkim.</i> Gangtok, Sikkim.

Date of Election.		
6-6-27	N	Nandi, MAHARAJA SRIS CHANDRA, M.A., M.L.C., Zemindar. Kasimbazar Rajbari, Kasimbazar, Murshidabad.
4-2-29	N	Narain, HIRDE, M.A., B.T., Professor of History, Morris College. Nagpur, C.P.
5-2-34	N	Nariman, RUSTOM, K., M.I.C.E., A.C.H., F.R.G.S. (Retired Superintending Engineer, Punjab Irrigation), Professor of Engineering, Osmania University. 'Gulistan', Sappers Lines, Secunderabad, Deccan.
5-3-28	R	Neogi, PANCHANAN, M.A., PH.D., I.E.S., Professor of Chemistry, Presidency College. 21, Kundu Lane, Belgachia, Calcutta.
3-11-30	A	Newman, CARL DAMIEN, M.B.B.S., D.T.M. & H., District Medical Officer, E.B.Ry. 2, Belvedere Park, Alipur, Calcutta.
3-12-24	N	Newman, CHAS F., F.R.G.S., M.R.S.T., M.C.P. Ramnagar, Benares.
7-4-15	F	Ohtani, COUNT KOZUI. San-ya-so, Edomachi, Fushimi, Kyoto, Japan.
5-11-28	R	Olpadvala, E. S. 52, Chowringhee, Calcutta.
5-4-26	R	Parker, RICHARD HENRY, I.C.S., Late Scholar of St. John's College, Oxford; Workmen's Compensation Commissioner. Writer's Building, Calcutta.
5-2-34	R	Pasricha, CHIRANJI LAL, M.A., M.B., B.CHIR. (CANTAB.), M.R.C.S. (ENG.), L.R.C.P. (LOND.), CAPTAIN, I.M.S., Professor of Pathology, Bacteriology and Helminthology, School of Tropical Medicine and Hygiene. 11, Rowland Road, Calcutta.
6-5-29	F	Pawsey, C. R., Indian Civil Service. c/o The Lloyds Bank, 6, Pall Mall, London, S.W. 1.
6-6-88	L	Pennell, AUBRAY PERCIVAL, B.A., Barrister-at-Law. Lamb's Building, Temple, London, E.C. 4.
5-2-34	N	Percival, FREDERICK GEORGE, PH.D. (LOND.), F.G.S., General Superintendent, Ore Mines and Quarries, Tata Iron and Steel Co. Jamshedpur.
1-4-25	R	Perier, FERDINAND, S.J., Most Reverend the Archbishop of Calcutta. 32, Park Street, Calcutta.
3-2-30	A	Pettigrew, REV. WILLIAM, Missionary. American Baptist Foreign Mission Society, P.O. Kangpokpi, Manipur, Assam.
6-4-31	N	Prasad, SHARDA. c/o Messrs. Gopinath Lal Behari, Satna.
3-4-18	L	*Prashad, BAINI, D.SC., F.Z.S., F.R.S.E., F.R.A.S.B., Director, Zoological Survey of India. Indian Museum, Calcutta.
3-8-25	N	Pruthi, HEM SINGH, M.SC. (PUNJAB), PH.D. (LONDON), Imperial Entomologist, Imperial Institute of Agricultural Research. Pusa, Darbhanga.
3-12-24	R	Pushong, E. S., M.D., L.S.A., Medical Practitioner. 1, Chapel Road, Hastings, Calcutta.
3-11-30	R	Rahman, SHAH KALIMUR, M.A., Lecturer in Arabic and Persian, Calcutta University. 51, Baitakhana Road, Calcutta.
7-9-36	N	Ram, DAULAT, Accountant, Military Secretary's Office. c/o Messrs. Biru Mal Chiranji Lal, Chhatta Magni Ram, Patiala.

Date of Election.		
6-4-36	R	Rankin, EVERETT H. , M.B., <i>Assistant General Manager for India. The Standard Vacuum Oil Co.</i> 6, Durgapore Park, Alipore, Calcutta.
6-3-34	R	Rao, U. SHANKER , <i>Bengal Pilot Service.</i> 83, Chowringhee, Calcutta.
1-2-26	N	Rao, Y. RAMACHANDRA, RAO SAHIB , M.A., F.E.S., <i>Locust Research Entomologist.</i> McLeod Road, Karachi.
2-7-24	N	Ray, ABINASH CHANDRA , B.A. R.M.H.E. School, P.O. Baidyabati.
7-9-21	R	Ray, HEM CHANDRA , M.A., PH.D. (LONDON). P.39A, Manicktollah Spur, Calcutta.
5-1-21	N	Ray, JAGADISNATH, MAHARAJA , <i>Maharaja of Dinajpore.</i> Dinajpore.
5-3-90	R	*Ray, SIR PROFULLA CHANDRA , KT., C.I.E., D.SC., F.R.A.S.B., <i>University College of Science</i> , 92, Upper Circular Road, Calcutta.
5-11-28	L	Reinhart, WERNER , <i>Merchant.</i> c/o Messrs. Volkart Bros., Rychenberg, Winterthur, Switzerland.
2-4-24	F	Richards, F. J. , I.C.S. 6. Lexham Gardens, London, W. 8.
5-2-34	R	Richter, HERBERT , DR. JUR., <i>Vice-Consul for Germany.</i> 26, Lee Road, Calcutta.
1 4-29	A	Rizvi, SYED HAMID HUSAIN , <i>Excise Sub-Inspector.</i> Mohalla Sanechri, Near Musjid of Munshi Sk. Ghassu, Saugor, C.P.
3-12-24	L	Roerich, GEORGE NICHOLAS , M.A., M.R.A.S., <i>Orientalist.</i> 310, Riverside Drive, New York, U.S.A. ('Urusvati' Naggar, Kulu, Punjab).
2-7-28	L	Roerich, NICHOLAS , <i>Professor, Honorary President, Master Institute of United Arts, New York, U.S.A., Artist-Painter.</i> 310, Riverside Drive, New York, U.S.A.
3-12-24	N	Rogers, T. E. , <i>Tea Planter.</i> The Tyroom Tea Co., Ltd., Kharikatia, Assam.
4-12-01	F	*Ross, SIR EDWARD DENISON , KT., C.I.E., PH.D., F.R.A.S.B., <i>Director, School of Oriental Studies.</i> Finsbury Circus, London, E.C. 2.
5-6-33	R	Rossetti, FELIX FRANCIS LEO , <i>Secretary.</i> Y.M.C.A. 42, Corporation Street, Calcutta.
6-12-26	R	Roy, A. K. , <i>Barrister-at-Law, Advocate-General, Bengal.</i> 3, Upper Wood Street, P.O. Theatre Road, Calcutta.
1-12-30	N	Roy, KUMAR KAMALRANJAN , B.A., <i>Zemindar.</i> Kashim-bazar Post, Dt. Murshidabad.
4-3-35	R	Roy, SAILESWAR SINGH , <i>Landholder.</i> 15, Lansdowne Road, Calcutta.
6-8-24	N	Roy-Chowdhury, BRAJENDRA KISHORE , <i>Zemindar.</i> (53, Sukea Street, Calcutta.) Gauripur, Mymensingh.
7-5-28	N	*Saha, MEGH NAD , D.SC., F.R.S., F.R.A.S.B., <i>Professor of Physics, University of Allahabad.</i> Katra, Allahabad.
5-11-24	N	*Sahni, B. , M.A., SC.D. (CANTAB.), D.SC., F.G.S., F.R.A.S.B., <i>Professor of Botany.</i> The University, Lucknow.
5-2-34	L	Sale, HAROLD MONTAGUF , M.A., F.G.S. Mancatter Cottage, Atherstone, Warwickshire, England.
4-5-36	N	Sarawgi, CHANDMALL , <i>Member, Gauhati Municipal Board.</i> Partner in the firm of Saligram Rai Chunilal Bahadur & Co. Gauhati, Assam.
3-12-24	R	Sarkar, C. K. , C.E., <i>Engineer and Architect.</i> 10, Hastings Street, Calcutta.

Date of Election		
4-2-35	R	Sarkar, NALINI RANJAN. Hindusthan Buildings, Corporation Street, Calcutta.
4-2-35	N	Sayeeduddin, MOHAMMED, B.SC., M.A. (EDIN.), F.R.M.S., F.F.SC., <i>Professor of Botany, Osmania University.</i> Hyderabad, Deccan.
6-3-33	R	Seal, SATIS CHANDRA, M.A., B.L., <i>Honorary Secretary, Indian Research Institute.</i> 55, Upper Chitpore Road, Calcutta.
5-2-34	R	Selzam, EDWART VON, <i>German Diplomatic Service, Consulate-General for Germany.</i> 26, Lee Road, Calcutta.
1-4-25	R	Sen, BENOY CHANDRA, M.A. 'Rupeswar', Diamond Harbour Road, Behala.
7-12-36	R	Sen, DHIRENDRA NATH, <i>Merchant and Landlord.</i> 7, Rawdon Street, Calcutta.
3-12-24	R	Sen, H. K., M.A., D.SC. (LONDON), D.I.C., <i>Professor of Chemistry, University College of Science.</i> 92, Upper Circular Road, Calcutta.
1-6-36	R	Sen, JITENDRO MOHAN, M.ED., B.SC., F.R.G.S., F.N.I., <i>Assistant Director of Public Instruction, Bengal.</i> 63, Lansdowne Road, Calcutta.
5-12-23	L	Sen, LAKSHMAN, H.H. RAJA OF SUKET. Suket State, Punjab.
1-4-29	R	Sen-Gupta, NARES CHANDRA, M.A., D.L., <i>Advocate, High Court.</i> 36, Girish Mukherjee Road, Bhawanipore, Calcutta.
5-4-26	R	Senior-White, RONALD, F.E.S., F.R.S.T.M. & H., <i>Malariologist.</i> 5, Godfrey Mansions, Garden Reach, Calcutta.
1-12-97	R	Seth, MESROBY JACOB, M.R.A.S., M.S.A., F.R.S.A., <i>Examiner in Classical Armenian to the Calcutta University.</i> 9, Marsden Street, Upper Flat, Calcutta.
5-7-11	L	*Sewell, ROBERT BERESFORD SEYMOUR, C.I.E., M.A., SC.D. (CANTAB.), M.R.C.S., L.R.C.P., F.Z.S., F.L.S., F.R.S., F.R.A.S.B., LT.-COL., I.M.S., <i>Late Director, Zoological Survey of India.</i> 18, Barrow Road, Cambridge, England.
2-11-25	A	Sharif, MOHAMMAD, D.SC., F.R.M.S., F.L.S., <i>Lecturer in Zoology.</i> Muslim University, Aligarh.
6-5-29	N	Sharma, SRI RAM, M.A., M.R.A.S., M.A.O.S., <i>Professor of History.</i> D.A.V. College, Lahore.
5-8-35	R	Shattock, JOHN SWITHIN HARVEY, B.A. (OXON.), I.C.S., <i>Assistant Private Secretary to His Excellency the Governor of Bengal.</i> Government House, Calcutta.
2-5-23	N	Shebbeare, E. O., <i>Conservator of Forests.</i> Darjeeling.
6-1-09	N	Shirreff, ALEXANDER GRIERSON, B.A., I.C.S. <i>Commissioner, Gorakhpur.</i> U.P.
6-3-01	N	*Shirwani, NAWAB HABIB-UR-RAHMAN, F.R.A.S.B., <i>Rais, Bhikanpur.</i> Habibganj, District Aligarh.
4-1-26	N	Shortt, H. E., LT.-COL., I.M.S., <i>Director, King's Institute, Guindy.</i> Madras.
6-2-28	L	Shumser JUNG BAHADUR RANA, SIR KAISER, K.B.E., <i>SUPRADEPTA MANYAVARA, LIEUT.-GENERAL, Nepalese Army.</i> Kaiser Mahal, Kathmandu, Nepal.
5-2-02	N	Shyam Lal, LALA, M.A., LL.B. Nawabganj, Cawnpore, U.P.
4-11-29	R	Siddiqi, MOHAMMAD ZUBAYR, M.A., PH.D., <i>Sir Asutosh Professor of Islamic Culture, Calcutta University.</i> P. 274, Bright Street, Park Circus, Calcutta.
5-3-13	L	*Simonsen, JOHN LIONEL, D.SC., F.I.C., F.R.A.S.B. <i>University College of North Wales, Bangor, North Wales.</i>

Date of Election.		
6-2-18	N	Singh , MANYABARA BADAKAJI MARICHI MAN, PANDITJI, C.I.E. 38, Khichapokhari, Kathmandu, Nepal.
4-11-29	F	Singh , JAIPAL, M.A. (<i>Modern Greats</i>), <i>St. John's College, Oxford University</i> . Achimota College, Accra, West Africa.
5-3-34	L	Singh , HIS HIGHNESS THE HON'BLE MAHARAJADHIRAJA SIR KAMESWAR, K.C.I.E. Darbhanga.
2-1-33	N	Singh , RUDRA PERTAB, RAO BAHADUR, <i>Proprietor, Sonbarsa Raj</i> . Sonbarsa P.O., District Bhagalpore.
4-2-35	N	Singh , SARABJIT. M.A., B.L. P.O. Imphal, Manipur State.
3-6-35	R	Singhania , RAGHUNATH PRASAD, VIDYABHUSAN-VISARAD, <i>Secretary, Rajasthan Research Society</i> . 27, Baranoshi Ghose Street, Simla, Calcutta.
7-9-36	R	Singh Roy , THE HON'BLE SIR BIJAY PRASAD. KT. <i>Minister, Government of Bengal</i> . 15, Lansdowne Road, Calcutta.
5-9-12	R	Singhi , BAHADUR SINGH. (Azimganj, Murshidabad.) 48, Gariahat Road, Calcutta.
7-8-33	N	Sinh , RAGHUBIR, RAJKUMAR, M.A., LL.B., <i>Heir-Apparent of Sitaman State</i> . Raghubir Niwas, Sitarnau, C.I.
7-9-36	N	Sinha , JADUNATH. M.A., PH.D., <i>Prechand Roychand Scholar, Professor of Philosophy, Meerut College</i> . Meerut, U.P.
7-5-28	F	Sinha , LORD, OF RAIPUR. Queen Anne Mansions, St. James' Park, London.
6-6-27	N	Sinha , SHEONANDAN PRASAD, M.B., <i>Assistant Surgeon</i> . Government Hospital, Jamshedpur.
6-2-28	R	Sinha , SUHRID CHANDRA, KUMAR, M.SC. 18, Ananda Lane, P.O. Shambazar, Calcutta.
4-1-26	N	Sinton , J. A., O.B.E., LT.-COL., I.M.S., V.C., <i>Officer-in-Charge, Malaria Bureau</i> . Central Research Institute, Kasauli.
5-7-16	L	Sircar , GANAPATI, VIDYARATNA. 69, Beliaghata Main Road, Calcutta.
5-3-24	N	Sircar , THE HON'BLE SIR NRIPENDRA NATH, K.C.S.I., KT., M.A., B.L., <i>Barrister-at-Law</i> . Law Member, H.E. The Viceroy's Executive Council. New Delhi.
5-3-24	R	Sircar , SIR NIL RATAN, KT., M.A., M.D., <i>Physician</i> . 7, Short Street, Calcutta.
5-8-29	R	Sommerfeld , ALFRED, <i>Merchant</i> . c/o Mousell & Co., Mercantile Buildings, Lall Bazar, Calcutta.
3 9-34	R	Sondhi , VED PALL, M.SC., F.G.S., <i>Assistant Superintendent, Geological Survey of India</i> . 27, Chowringhee, Calcutta.
7-3-27	R	Stagg , M., LT.-COL., R.E., O.B.E., <i>Master, H.M.'s Mint</i> . 47, Strand Road, Calcutta.
7-3-23	F	Stamp , L. DUDLEY, B.A., D.SC. University of London, London School of Economics, Houghton Street, London, W.C. 2.
4-1-26	N	Stapleton , GRACE (MISS), M.D., B.S. (LONDON). Dufferin Hospital, Delhi.
28-9-04	L	*Stapleton , HENRY ERNEST, M.A., B.SC., I.E.S., F.R.A.S.B., <i>Late Director of Public Instruction, Bengal</i> . St. Brelade, Jersey, C.I, England.
5-11-28	N	Statham , R. M., C.I.E., B.A., I.E.S., <i>Educational Commissioner with the Government of India</i> . New Delhi.
6-5-25	R	Staub , MAX, <i>Consul for Switzerland</i> . 100, Clive Street, Calcutta.
1-11-22	A	Strickland-Anderson (Mrs.). 1, Alipur Park, Calcutta.

Date of Election.		
2-6-20	R	Suhrawardy , SIR HASSAN, O.B.E., LT.-COL., KT., M.D., F.R.C.S.I., D.P.H., <i>Chief Medical Officer, E.B. Ry., late Vice-Chancellor, Calcutta University.</i> 3, Suhrawardy Avenue, Park Circus, Calcutta.
3-3-20	N	Sundararaj , BUNGURU, M.A., PH.D., <i>Director of Fisheries.</i> Chepauk, Madras.
7-11-32	L	Suvarna , SHUMSER JUNG BAHADUR RANA, <i>Major-General in the Nepalese Army.</i> Singha Darbar, Kathmandu, Nepal.
6-4-98	R	Tagore , SIR PRADYOT COOMAR, KT., MAHARAJA BAHADUR. "Tagore Castle", 12, Prasanna Coomar Tagore Street, Calcutta.
7-11-27	R	Tarkatirtha , BIMALANANDA, Kaviraj, Punditbhusan, Byakaranatirtha. 90/3, Grey Street, Calcutta.
31-8-93	L	Tate , GEORGE PASSMAN. 56, Cantonment, Bareilly, U.P.
2-12-29	A	Thomas , H. W., F.C.S., M.P.S., <i>Senior Partner and Chairman of the Managing Directors, Messrs. Smith Stanistreet & Co.</i> Stanistreet House. 18, Convent Road, Entally, Calcutta.
1-6-04	L	*Tipper , GEORGE HOWLETT, M.A., F.G.S., M.INST.M.M., F.R.A.S.B. 'The Laurels', Glebe Road, Cambridge, England.
4-3-29	A	Travers , SIR WALTER LANCELOT, KT., C.I.E., O.B.E., M.L.C., <i>Tea Planter, Baradighi Tea Estate.</i> Baradighi P.O. B.D.R., Jalpaiguri.
7-5-28	F	Tucci , GIUSEPPE, PH.D., <i>Late Professor of Religions and Philosophy of India and the Far East, University of Rome; Professor of Chinese, University of Naples.</i> Naples, Italy.
5-7-26	A	Tyson , JOHN DAWSON, C.B.E., M.A. (OXON), I.C.S., J.P., <i>Late Private Secretary to H.E. the Governor of Bengal.</i> Government House, Calcutta.
3-9-34	R	Ulser , M. E. M. M., <i>Consul-General for Belgium.</i> 9, Pretoria Street, Calcutta.
7-3-27	R	Urquhart , REV. W. S., M.A., D.D., D.LITT., <i>Principal, Scottish Church College, and Late Vice-Chancellor, Calcutta University.</i> 3 & 4, Cornwallis Square, Calcutta.
4-7-27	N	Vance , R. L., M.B., B.C.H., B.A.O. (DUB.), L.M. (ROT.), MAJOR, I.M.S., <i>Officiating Chief Medical Officer, Western India States Agency.</i> Rajkot, Kathiawar.
7-8-33	R	Vedantatirtha , VANAMALI, M.A., <i>Formerly Professor, Cotton College, Gauhati.</i> 8/4-E, Nepal Bhattacharya Lane, Kalighat, Calcutta.
6-6-32	R	Vere-Hodge , MRS. E. H., <i>Author.</i> 9/4, Middleton Row, Calcutta.
5-7-05	R	Vidyabhushan , AMULYA CHARAN. Vangiya Mahakosha, 5, Jadu Mitter Lane (North), Shambazar, Calcutta.
1-2-32	R	Visser , DR. PH. C., <i>Consul-General for the Netherlands.</i> E-1, Clive Buildings, Clive Street, Calcutta.
6-3-01	L	*Vogel , JEAN PHILIPPE, LITT.D., F.R.A.S.B. Noordeindsplein. 4a, Lieden, Holland.
27-9-94	L	Vost , WILLIAM, LT.-COL., I.M.S. Leicester Lodge, 1, Medina Villas, Hove, Sussex, England.
6-5-25	R	*Wadia , D. N., M.A., B.SC., F.R.G.S., F.R.A.S.B., <i>Geological Survey of India.</i> 27, Chowringhee, Calcutta.

Date of Election.		
5-3-28	A	Waight, HARRY GEORGE , B.A. (OXON. and LOND.), F.R.G.S., I.C.S., <i>District and Sessions Judge</i> . Burdwan.
2-5-27	A	Watson, SIR ALFRED HENRY , ET., <i>Late Editor, The 'Statesman', Calcutta</i> . England.
2-2-31	A	Wauchope, R. S. , O.B.E., A.I.C.E., F.R.A.I., MAJOR, I.A. 8, Park Chambers, 93, Park Street, Calcutta.
6-2-33	N	Wellsted, THOMAS ARTHUR , A.R.S.M., B.SC., ASSOC. INST. M.M., <i>Mining Engineer</i> . Mansar, P.O. Kandri, Ramtek, C.P.
6-2-33	R	West, WILLIAM DIXON , M.A. (CANTAB.), <i>Assistant Superintendent, Geological Survey of India</i> . 27, Chowringhee, Calcutta.
1-11-26	R	Westcott, FOSS , MOST REVEREND, D.D. (CANTAB.), HONORARY D.D. (OXON), <i>Lord Bishop of Calcutta and Metropolitan of India, Burma and Ceylon</i> Bishop's House, 51, Chowringhee, Calcutta.
6-4-36	R	White, JOHN CAMPBELL , <i>American Consul-General</i> . 9, Esplanade Mansions, Calcutta.
19-9-06	L	*Whitehead, RICHARD BERTRAM , F.R.A.S.B., I.C.S. (RETD.). 30, Millington Road, Cambridge, England.
6-5-29	A	Williams, HENRY FRENCH FULFORD , M.A., CLARE COLLEGE (CAMB.), <i>Chaplain of Barrackpore</i> . Barrackpore.
7-9-36	R	Williams, N. T. Messrs. Orr, Dignam & Co., 32, Dalhousie Square, Calcutta.
6-2-28	F	Williams, T. TALIESIN , M.A., B.SC. 2, Orchard, Welwyn Garden City, Herts., England.
3-2-34	R	Wilson, HARRY ELLIS CHASLER , M.B., CH.B., D.S., <i>Professor of Biochemistry and Nutrition, All-India Institute of Hygiene and Public Health</i> . U.S. Club, Calcutta.
1-4-08	R	Wordsworth, WILLIAM CHRISTOPHER , M.A., I.E.S. (RETD.). c/o The "Statesman", Chowringhee Square, Calcutta.
7-3-27	N	Wright, FREDERIC MAITLAND , <i>Broker</i> . Post Box No. 72, Bombay.
5-2-19	N	*Yazdani, GHULAM , M.A., F.R.A.S.B., <i>Epigraphist to the Government of India for Persian and Arabic Inscriptions, Hyderabad</i> . Archæological Survey, Hyderabad, Deccan.

ORDINARY MEMBERS.

(Chronological.)

1884.				1905.			
Nov.	5.	Middlemiss, C. S.		July	5.	Vidyabhusana, A. C.	
1887.				Aug.	2.	McCay, D.	
Aug.	25.	Criper, W. R.		1906.			
1888.				Jan.	3.	Chapman, J. A.	
June	6.	Pennell, A. P.		Sept.	19.	Whitehead, R. B.	
1889.				Oct.	31.	Finlow, R. S.	30
Mar.	6.	La Touche, T. H. D.		1907.			
1890.				July	3.	Brown, J. C.	
5 Mar.	5.	Ray, Sir Prafulla C.		"	"	Christie, W. A. K.	
1892.				1908.			
Jan.	11.	Maclagan, Sir Edward D.		Jan.	1.	Brahmachari, Sir U. N.	
Feb.	1.	Bodding, P. O.		April	1.	Wordsworth, W. C.	
1893.				1909.			
Aug.	31.	Tate, G. Passman		Jan.	6.	Shirreff, A. G.	35
1894.				April	7.	Bentley, C. A.	
Sept.	27.	Vost, W.		July	7.	Bazaz, R. K.	
1895.				Oct.	6.	Brown, P.	
10 Mar.	6.	Bose, Sir Jagadis C.		"	"	Gangoli, O. C.	
Sept.	19.	De, K. C.		Nov.	3.	Christophers, Sir S. R.	40
1896.				1910.			
Jan.	8.	Burn, Sir Richard		May	4.	Dhavle, S. B.	
1897.				"	"	Kemp, S. W.	
Dec.	1.	Seth, M. J.		Sept.	7.	Gravely, F. H.	
1898.							
Jan.	5.	Dods, W. K.		1911.			
15 April	6.	Tagore, Sir Pradyot C.		Feb.	1.	Insch, J.	
1900.				"	"	Law, N. N.	45
Dec.	5.	Grieve, J. W. A.		Mar.	1.	Mahtab, Sir Bijay Chand	
1901.				June	7.	Chatterjee, K. K.	
Mar.	6.	Shirwani, Nawab Habib-ur-Rahman		"	"	Hosain, M. H.	
"	"	Vogel, J. P.		July	5.	Sewell, R. B. S.	
June	5.	Mann, H. H.		Nov.	1.	Ahmed, K.	50
20 Dec.	4.	Ross, Sir Edward D.					
1902.				1912.			
Feb.	5.	Shyam Lal.		May	1.	Harley, A. H.	
July	2.	Doxey, F.		June	5.	Misra, C.	
1904.				July	3.	Andrews, E. A.	
June	1.	Tipper, G. H.		Sept.	4.	Ghosh, T.	
Aug.	3.	Fermor, Sir L. L.		"	"	Singhi, B. S.	55
25 "	"	Stapleton, H. E.					

1913.

Mar.	5.	Simonsen, J. L.
April	2.	Calder, C. C.
June	4.	Majumdar, R. C.
Nov.	5.	Fox, C. S.

1914.

60	Mar.	4.	Bacot, J.
	April	1.	Chaudhuri, G. D.
	July	1.	Law, S. C.
	Aug.	5.	Law, B. C.

1915.

	April	7.	Ohtani, Count K.
65	Aug.	4.	Gurner, C. W.
	Sept.	1.	Cleghorn, M. L. W.
	Oct.	27.	Chatterjee, Sir A. C.

1916.

	Feb.	2.	Majumdar, N. K.
	June	7.	Mahajan, S. P.
70	July	5.	Sarkar, G.

1917.

	April	4.	Awati, P. R.
	"	"	Aiyangar, K. V. R.
	Aug.	1.	Bhandarkar, D. R.

1918.

	Feb.	6.	Banerji, N. N.
75	"	"	Manen, Johan van
	"	"	Singh, B. M.
	April	3.	Prashad, B.

1919.

	Feb.	5.	Yazdani, G.
	Mar.	5.	Gupta, S. P.
80	Nov.	5.	Hemraj, R.

1920.

	Mar.	3.	Mahalanobis, P. C.
	"	"	Sundara Raj, B.
	June	2.	Suhrawardy, Sir H.
	"	"	Majumdar, N. G.
85	Aug.	4.	Dikshit, K. N.
	Sept.	1.	Chakladar, H. C.
	"	"	Chanda, R. P.
	"	"	Chatterjee, N. C.
	Dec.	"	Akbar Khan, Sir M.

1921.

90	Jan.	5.	Ray, J. N.
	Feb.	2.	Jain, Chhote Lall
	"	2.	Mukerjee, R. P.

Feb.	2.	Mookerjee, S. C.
Mar.	2.	Agharkar, S. P.
Sept.	7.	Ray, H. C.
Nov.	2.	Hora, S. L.

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1922.

Feb.	1.	Bhattacharya, V. S.
"	"	Chopra, R. N.
April	5.	Abdul Ali, A. F. M.
Sept.	6.	Das-Gupta, S. N.
Nov.	1.	Strickland-Anderson, Mrs.

100

1923.

Mar.	7.	Labey, G. T.
"	"	Stamp, L. D.
May	2.	Shebbeare, E. O.
June	6.	Howard, Sir A.
"	"	Hutton, J. H.
Aug.	1.	Biswas, K. P.
Dec.	5.	Chopra, B. N.
"	"	Barwell, N. F.
"	"	Sen, H. H. Lakshman

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1924.

Feb.	6.	Mahindra, K. C.
Mar.	5.	Banerjee, P. N.
"	"	Mitter, Sir B. L.
"	"	Mitter, D. N.
"	"	McPherson, J.
"	"	Sircar, Sir N. N.
"	"	Sircar, Sir N. R.
April	2.	Bahl, K. N.
"	"	Ghose, K.
"	"	Richards, F. J.
"	"	Haq, M. M.
"	"	Mitra, J. C.
May	7.	Bhattacharya, B.
July	2.	Ray, A. C.
"	"	Mookerjee, S. P.
Aug.	6.	Chatterji, S. K.
"	"	Moloney, W. J.
"	"	Roy-Chowdhury, B. K.
"	"	Davies, L. M.
Nov.	5.	Chattopadhyay, K. P.
"	"	Sahni, B.
"	"	Mookerji, B. N.
Dec.	3.	Das, S. N.
"	"	Newman, Chas. F.
"	"	Pushong, E. S.
"	"	Rogers, T. E.
"	"	Basu, J. N.
"	"	Ghose, S. C.
"	"	Sarkar, C. K.
"	"	Roerich, G. N.
"	"	Sen, H. K.
"	"	Khan, R. R.

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1925.			
	Feb.	4.	Guha, B. S.
	Mar.	4.	Benthall, Sir E. C.
145	"	"	Das, A. N.
	April	1.	Perier, F.
	"	"	Hobbs, H.
	"	"	Sen, B. C.
	May	6.	Jatia, Sir O. M.
150	"	"	Khanna, V. L.
	"	"	Staub, Max.
	"	"	Wadia, D. N.
	June	3.	Datta, S. K.
	July	6.	Bose, M. M.
155	Aug.	3.	Pruthi, H. S.
	Nov.	2.	Acharya, P.
	"	"	Chattopādhyāya, K. C.
	"	"	Crookshank, H.
	"	"	Kimura, R.
160	"	"	Sharif, M.
1926.			
	Jan.	4.	Shortt, H. E.
	"	"	Sinton, J. A.
	"	"	Stapleton, G. (Miss)
	Feb.	1.	Rao, Y. R.
165	"	"	Ghuznavi, Sir A. K.
	"	"	Hingston, H.
	"	"	Harris, H. G.
	"	"	Ghuznavi, A. H.
	Mar.	1.	McKay, J. W.
170	"	"	Datta, H. N.
	"	"	Basu, N. K.
	"	"	Kramrisch, Stella
	"	"	Bagnall, J. F.
	April	5.	Senior-White, R.
175	"	"	Ghose, B. C.
	"	"	Parker, R. H.
	"	"	Bhatia, M. L.
	"	"	Mitter, K. N.
	June	7.	Lemmon, R. D.
180	July	5.	Mukhopadhyaya, P. K.
	"	"	Tyson, J. D.
	"	"	Lyne, H. W.
	Aug.	2.	Mukherjee, J. N.
	"	"	Khettry, B.
185	Nov.	1.	Jameson, T. B.
	"	"	Modi, J. R. K.
	"	"	Westcott, F.
	"	"	Barhut, T. K.
	"	"	Mills, J. P.
190	"	"	Galstaun, S.
	"	"	Bagchi, P. C.
	Dec.	6.	Aiyangar, S. K.
	"	"	Guha, S. N.
	"	"	Roy, A. K.

1927.			
195	Jan.	3.	Chakravarty, N.
	"	"	Bivar, H. G. S.

	Feb.	7.	Chatterjee, A.	
	"	"	Captain, D. M.	
	Mar.	7.	Hopkinson, A. J.	
	"	"	Urquhart, W. S.	200
	"	"	Bake, A. A.	
	"	"	Stagg, M.	
	"	"	Ghosh, P. N.	
	"	"	Abdul Kadir, A. F. M.	
	"	"	Fukushima, N.	205
	"	"	Wright, F. M.	
	May	2.	Watson, Sir A. H.	
	June	6.	Nandi, Maharaja S. C.	
	"	"	Jain, B.	
	"	"	Sinha, S. P.	210
	July	4.	Chatterjee, P. P.	
	"	"	Chakravarti, C.	
	"	"	Vance, R. L.	
	Nov.	7.	Tarkatirtha, B.	
	"	"	Mukherji, D.	215
	"	"	Brahmachary, S. C.	
	Dec.	5.	Namgyal, H.H. Sir Tashi	
	"	"	Dechhen, H.H. Kun- zang	
	"	"	Chowdhury, Sir C.	
	"	"	Mukerjee, S. K.	220

1928.

	Jan	2.	Basu, N. M.	
	"	"	Mello, F. de	
	Feb	6.	Sinha, S. C.	
	"	"	Ezra, Sir D.	
	"	"	Mukerji, Sir M. N.	225
	"	"	Williams, T. T.	
	"	"	Shumsher, Sir Kaiser	
	Mar.	5.	Waight, H. G.	
	"	"	Gooptu, D. N.	
	"	"	Neogi, P.	230
	"	"	Biswas, C. C.	
	"	"	Eberl, Otto	
	April	2.	Mullick, K. C.	
	"	"	Bhattacharyya, N. C.	
	"	"	Kumar, K. K.	235
	"	"	Chowdhury, Rai J. N.	
	"	"	Harris, L. E.	
	May	7.	Chatterji, K. N.	
	"	"	Chatterjee, Sir N. R.	
	"	"	Tucci, G.	240
	"	"	Murray, E. F. O.	
	"	"	Ghosal, U. N.	
	"	"	Lord Sinha of Raipur	
	"	"	Saha, M. N.	
	June	4.	Bhadra, S. N.	245
	"	"	Bhattachali, N. K.	
	July	2.	Roerich, N.	
	Aug.	6.	Jaitly, P. L.	
	"	"	Ghuznavi, I. S. K.	
	"	"	Heron, A. M.	250

	Nov.	5.	Olpadvala, E. S.	
	"	"	Statham, R. M.	
	"	"	Reinhart, W.	
	"	"	Galstaun, J. C.	
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	1929.			
255	Jan.	7.	Ghose, M. C.	
	Feb.	4.	Narain, Hirde	
	"	"	Jenkins, W. A.	
	Mar.	4.	Travers, Sir W. L.	
	"	"	Mitter, H. K.	
260	"	"	De, J. C.	
	"	"	Basu, B. K.	
	"	"	Mullick, P. N.	
	April	1.	Ghose, D. P.	
	"	"	Rizvi, S. H. H.	
265	"	"	Sen-Gupta, N. C.	
	May	6.	Sharma, S. R.	
	"	"	Williams, H. F. F.	
	"	"	Pawsey, C. R.	
	July	1.	Dunn, J. A.	
270	Aug.	5.	Sommerfeld, A.	
	Nov.	4.	Singh, J.	
	"	"	Cotter, G. de P.	
	"	"	Campbell, G. R.	
	"	"	Edwards, L. B.	
275	"	"	Siddiqi, M. Z.	
	"	"	Mallya, B. G.	
	Dec.	2.	Khan, M. R.	
	"	"	Fawcus, L. R.	
	"	"	Thomas, H. W.	
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	1930.			
280	Jan.	6.	Jain, N. K.	
	"	"	Haldar, S. K.	
	"	"	Hamilton, Sir D. M.	
	"	"	Martin, M. F. C.	
	"	"	Chakraverti, S. C.	
285	Feb.	3.	Henderson, A. G.	
	"	"	Mahtab, U. C.	
	"	"	Pettigrew, W.	
	"	"	Chakravarti, M. N.	
	Mar.	3.	Mukharji, I. C.	
290	"	"	Ashton, H. S.	
	May	5.	Deo, Sir P. C. Bhanj	
	"	"	Matthias, O. G.	
	"	"	Mallam, G. L.	
	"	"	Cooper, G. A. P.	
295	June	2.	Kenny, D. E. C.	
	Nov.	3.	Austin, G. J.	
	"	"	Rahman, S. K.	
	Nov	"	Newman, C. D.	
	Dec.	1.	Roy, K. K.	
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	1931.			
300	Jan.	5.	Chatterji, D.	
	"	"	Evans, P.	
	Feb.	2.	Wauchope, R. S.	
	"	"	Douglas, G. W.	

	Feb.	2.	Clough, J.	
	Mar.	2.	Bose, S. K.	305
	April	6.	Bhose, J. C.	
	"	"	Prasad, S.	
	May	4.	Bottomley, J. M.	
	June	1.	Lort-Williams, J.	
	Aug.	3.	Barua, K. L.	310
<hr/>				
	1932.			
	Feb.	1.	Holme, J. W.	
	"	"	Visser, Ph. C.	
	Mar.	7.	Hughes, A.	
	"	"	Chakraborty, K. B.	
	"	"	Darbari, M. D.	315
	June	6.	Vere-Hodge, Mrs. E. H.	
	Nov.	7.	Suvarna Shumser	
	"	"	Driver, D. C.	
	Dec.	5.	Dutt, N.	
	"	"	Boyle, C. A.	320
	"	"	Deb, S. K.	
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	1933.			
	Jan.	2.	George, J.	
	"	"	Dutch, R. A.	
	"	"	Singh, R. P.	
	Feb.	6.	Wellsted, T. A.	325
	"	"	Ghatak, J. C.	
	"	"	West, W. D.	
	Mar.	6.	Seal, S. C.	
	June	5.	Chakravarti, S. K.	
	"	"	Rossetti, F. F. L.	330
	July	3.	Dutt, G. S.	
	Aug.	7.	Sinh, Raghubir	
	"	"	Vedantatirtha, V.	
	Nov.	6.	Kavyatirtha, R. D.	
	"	"	Krishnan, M. S.	335
	"	"	Coulson, A. L.	
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	1934.			
	Jan.	1.	Ahmad, M. J.	
	Feb.	5.	Bates, W. H.	
	"	"	Bhuyan, S. K.	
	"	"	Haldar, B. V.	340
	"	"	Kirby, W.	
	"	"	Law, B. C.	
	"	"	Nariman, R. K.	
	"	"	Pasricha, C. L.	
	"	"	Percival, F. G.	345
	"	"	Richter, H.	
	"	"	Sale, H. M.	
	"	"	Selzam, E. von	
	Mar.	5.	Craddock, Sir W. M.	
	"	"	Modi, J. J. J.	350
	"	"	Singh, H.H. Sir K.	
	May	7.	Bent, W. A.	
	"	"	Duncan, P. C.	
	June	4.	Chatterji, B. R.	
	"	"	Daver, N. S.	355

	Aug. 6.	Husain, S. A.		Sep. 30	Mitter, S. K.	
	" "	Mullick, M. L.		" "	Howland, F.	
	" "	Rao, U. S.		Nov. 4.	Bor, N. L.	
360	Sep. 3.	Auden, J. B.		" "	Anina Klebe.	
	" "	Krishnan, K. S.		" "	Hirtzel, M. A. F.	390
	" "	Ledrus, M.		" "	Chaudhuri, S. N.	
	" "	Sondhi, V. P.		Dec. 2.	Blakiston, J. F.	
	" "	Ulser, M. E. M. M.				
	" "	Couchman, H. J.		1936.		
365	Nov. 5.	Gee, E. R.		Jan. 6.	Anderson, Rt. Hon.	
	" "	Hosain, Prince		" "	Sir John.	
	" "	A. M. M. M. A.		" "	Berkeley-Hill, Owen	
	" "	Dey, M.		" "	A. R.	
	Dec. 3.	Burt, B. C.		" "	Brocke, A. G.	395
	" "	Gladstone, J.		Feb. 3.	Ahmad, Alfazuddin.	
370	" "	Wilson, H. E. C.		" "	Catto, Sir T. S.	
	" "	Brahmachari, P. N.		" "	Flury, E. C.	
	" "	Chatterjee, S. C.		Mar. 2.	Chatterji, M.	
				" "	Chatterji, Mrs. T.	400
1935.				April 6.	Rankin, E. H.	
	Feb. 4.	Singh, S.		" "	White, J. C.	
	" "	Sayeeduddin, M.		May 4.	Husain, S. A.	
375	" "	Sarkar, N. R.		" "	Sarawgi, C.	
	" "	Law, P. C.		June 1.	Sen, J. M.	405
	" "	Lal, R. B.		Sep. 7.	Bagechi, K. N.	
	" "	Jaffar, S. M.		" "	Gangooly, P. L.	
	Mar. 4.	Roy, S. Singh.		" "	Mandhata, H. O.	
380	" "	Jack, Hon. Justice		" "	Ram, D.	
	" "	R. E.		" "	Singh Roy, Hon. Sir	
	" "	Groth, E. M.		" "	B. P.	410
	June 3.	Singhania, R. P.		" "	Sinha, J.	
	Aug. 5.	Shattock, J. S. H.		" "	Williams, N. T.	
	Sep. 30.	Dutt, M. N.		Nov. 2.	Bothra, S.	
385	" "	Basu, S. K.		Dec. 7.	Daga, M.	
				" "	Sen, D. N.	415

LIFE MEMBERS.

(Chronological.)

5-11-84	C. S. Middlemiss (30 N.).	5- 3-13	J. L. Simonsen (19 N.).	
6- 6-88	A. P. Pennell (88 F.).	4- 3-14	J. Bacot (14 F.).	
6- 3-89	T. H. D. La Touche (10 N.).	5- 8-14	B. C. Law (33 R.).	30
11- 1-93	Sir Edward D. Maclagan (94 R.).	5- 7-16	G. Sircar (29 N.).	
5 1- 2-93	P. O. Bodding (14 N.).	6- 2-18	Johan van Manen (25 R.).	
31- 7-93	G. P. Tate (23 N.).	3- 4-18	B. Prashad (29 R.).	
27- 9-94	W. Vost (94 F.).	2-11-21	S. L. Hora (30 N.).	
19- 9-95	K. C. De (26 R.).	6- 6-23	Sir A. Howard (30 N.).	35
5-12-00	J. W. A. Grieve (00 F.).	1- 8-23	K. Biswas (36 R.).	
10 6- 2-01	J. Ph. Vogel (25 F.).	5-12-23	H.H. Lakshman Sen (24 N.).	
2- 7-02	F. Doxey (28 R.).	7- 5-24	B. Bhattacharya (24 N.).	
1- 6-04	G. H. Tipper (27 N.).	6- 8-24	L. M. Davies (24 N.).	
3- 8-04	Sir Lewis Leigh Fermor (36 F.).	3-12-24	G. Roerich (28 F.).	40
28- 9-04	H. E. Stapleton (26 R.).	6- 6-27	B. D. Jain (28 R.).	
15 2- 8-05	D. McCay (29 F.).	5-12-27	Sir Chhajuram Chow- dhury (27 R.).	
3- 1-06	J. A. Chapman (28 N.).	5-12-27	H.H. Sir Tashi Nam- gyal (27 N.).	
19- 7-06	R. B. Whitehead (26 N.).	5-12-27	H.H. Kunzang Dech- hen (27 N.).	
3- 7-07	J. Coggin Brown (28 N.).	6- 2-28	Sir D. Ezra (28 R.).	45
3- 7-07	W. A. K. Christie (29 N.).	6- 2-28	Sir Kaiser Shumsher Jung Bahadur Rana (28 N.).	
20 1- 1-08	Sir U. N. Brahma- chari (27 R.).	2- 7-28	N. Roerich (28 F.).	
7- 4-09	C. A. Bentley (30 N.).	5-11-28	W. Reinhart (28 F.).	
4- 5-10	S. B. Dhavle (10 N.).	4-11-29	G. de P. Cotter (32 N.).	
4- 5-10	S. W. Kemp (29 F.).	3- 3-30	H. S. Ashton (30 N.).	50
1- 2-11	James Insch (28 R.).	5- 1-31	P. Evans (31 N.).	
25 7- 6-11	M. Hidayat Hosain (27 N.).	7-11-32	Suvarna Shumser Jung Bahadur Rana (32 N.).	
5- 7-11	R. B. S. Sewell (28 N.).	6- 2-33	J. C. Ghatak (33 R.).	
1-11-11	Kamaluddin Ahmad (24 N.).	5- 2-34	H. M. Sale (34 N.).	
		5- 3-34	H.H. Sir K. Singh (34 N.).	55

SPECIAL ANNIVERSARY HONORARY MEMBERS.

Date of Election	(Science.)
15-1-34	BARON ERNEST RUTHERFORD OF NELSON, O.M., President, Royal Society, London.
15-1-34	PROF. ALBERT EINSTEIN, c/o Princeton University, New Jersey, U.S.A.
15-1-34	M. A. LACROIX, Secrétaire Perpetuel, Académie des Sciences, Paris.
15-1-34	SIR SYDNEY BARRARD, K.C.S.I., F.R.S., Foxhill, Salisbury Road, Farnborough, Hants, England.
15-1-34	DR. SIV HEDIN, Stockholm, Sweden.

(Letters.)

15-1-34	SIR JOHN MARSHALL, K.T., Avondale, Sydney Road, Guildford, Surrey, England
15-1-34	DR. RABINDRA NATH TAGORE, Santiniketan, Bolpur, Birbhum.
15-1-34	PROF. TAHA HOSAIN, Cairo.
15-1-34	PROF. ARTHUR CHRISTENSEN, 62, Raadhustvej, Charlottenlund, Denmark.
15-1-34	DR. J. VAN KAN, President, Royal Society of Arts and Letters, Batavia, Java.
15-1-34	H.R.H. PRINCE DAMRONG RAJANUBHAB OF SIAM, Siam.

ASSOCIATE MEMBERS.

Date of Election.	
1-2-22	*PIERRE JOHANNES, REV., S.J., B.LITT. (OXON.), <i>Professor of Philosophy</i> , St. Xavier's College, 30, Park Street, Calcutta.
1-2-22	*ANANTAKRISHNA SASTRI, MAHAMAHOPADHYAYA, VEDANTA-VISARADA, <i>Lecturer in Sanskrit</i> , Calcutta University. 32, College Square, Calcutta.
2-5-27	*N. N. VASU, RAI SAHIB. 20, Visvakosh Lane, Baghbazar, Calcutta.
2-12-29	†SARAT CHANDRA ROY, RAI BAHADUR, M.A., B.L., <i>Editor</i> , 'Man in India'. Church Road, Ranchi.
1-1-34	L. BOGDANOV. Flat 8-B, Solomon Mansions, 7, Royd Street, Calcutta.

* Re-elected for a further period of five years on 7-3-1932 under Rule 2c.

† Re-elected for a further period of five years on 1-1-1934 under Rule 2c.

INSTITUTIONAL MEMBERS

	Date of Election.	
	28-10-29	The Legatum Warnerianum (Oriental Department). University of Leyden, Leyden, Holland.
	2-12-29	The Adyar Library, Adyar, Madras S.
	4-5-31	The Benares Hindu University Library, Benares.
	1-6-31	The Ohtani University Library, Kyoto, Japan.
5	7-12-31	The Annamalai University Library, Annamalainagar, Chidambaram, S. India.
	30-10-33	The Allahabad University Library, Allahabad.
	30-4-34	The Bombay University Library, Bombay.
	23-1-36	The Principal, Islamia College, Peshawar.
	4-5-36	Principal, Patna College, Patna.
10	7-12-36	President, Forest Research Institute, Dehra Dun.

ORDINARY FELLOWS

	Date of Election.	
	2-2-10	T. H. D. La Touche, B.A., F.G.S.
	2-2-10	Sir Prafulla Chandra Ray, KT., C.I.E., M.A., D.SC.
	2-2-10	Sir E. D. Ross, KT., C.I.E., PH.D.
	7-2-12	Sir J. C. Bose, KT., C.S.I., C.I.E., M.A., D.SC., F.R.S.
5	7-2-12	Sir Samuel R. Christophers, KT., C.I.E., O.B.E., I.M.S., F.R.S.
	7-2-12	C. S. Middlemiss, C.I.E., B.A., F.G.S., F.R.S.
	5-2-13	J. Ph. Vogel, PH.D., LITT.D.
	5-2-13	S. W. Kemp, B.A., D.SC., F.R.S.
	3-2-15	G. H. Tipper, M.A., F.G.S., M.INST.M.M.
10	2-2-16	Sir Richard Burn, KT., C.S.I., I.C.S. (<i>retd.</i>).
	2-2-16	Sir L. L. Fermor, KT., O.B.E., A.R.S.M., D.SC., F.G.S., M.INST.M.M., F.R.S.
	7-2-17	F. H. Gravely, D.SC.
	6-2-18	J. L. Simonsen, D.SC., F.I.C., F.R.S.
	6-2-18	D. McCay, M.D., M.R.C.P., I.M.S.
15	5-2-19	J. Coggin Brown, O.B.E., M.I.M.E., F.G.S.
	5-2-19	W. A. K. Christie, B.SC., PH.D., M.INST.M.M.
	5-2-19	D. R. Bhandarkar, M.A., PH.D.
	5-2-19	R. B. Seymour Sewell, C.I.E., M.A., SC.D., M.R.C.S., L.R.C.P., F.L.S., F.Z.S., F.R.S., I.M.S.
	2-2-21	Sir U. N. Brahmachari, KT., M.A., PH.D., M.D., F.S.M.F.
20	1-2-22	Ramaprasad Chanda, B.A.
	4-2-25	M. Hidayat Hosain, PH.D.
	1-2-26	P. O. Bodding, M.A.
	7-2-27	Johan van Manen, C.I.E.
	7-2-27	B. Sahni, M.A., SC.D., D.SC., F.G.S.
25	6-2-28	H. E. Stapleton, M.A., B.SC., I.E.S. (<i>retd.</i>).
	6-2-28	B. Prashad, D.SC., F.Z.S., F.R.S.E.
	6-2-28	C. A. Bentley, C.I.E., M.B., D.P.H., D.T.M. & H.
	4-2-29	Sir Albert Howard, KT., C.I.E., M.A.
	4-2-29	J. H. Hutton, C.I.E., M.A., D.SC., I.C.S.
30	4-2-29	Sir Edward D. MacLagan, K.C.S.I., K.C.I.E.
	3-2-30	G. de P. Cotter, B.A., SC.D., M.INST.M.M., F.G.S.
	3-2-30	S. L. Hora, D.SC., F.Z.S., F.R.S.E.
	3-2-30	J. P. Mills, I.C.S., M.A., J.P.

Date of Election.		
3-2-30	Meghnad Saha, D.SC., F.R.S.	
2-2-31	S. Krishnaswami Aiyangar, M.A., PH.D., F.R.HIST.S.	35
2-2-31	R. N. Chopra, C.I.E., M.A., M.B., I.M.S.	
2-2-31	R. B. Whitehead, I.C.S. (<i>retired</i>).	
1-2-32	J. Bacot.	
6-2-33	Percy Brown, A.R.C.A.	
6-2-33	Ordhendra Coomar Gangoly, B.A.	40
6-2-33	Ghulam Yazdani, M.A.	
5-2-34	D. N. Wadia, M.A., B.SC., F.R.G.S.	
3-2-36	S. K. Chatterji, M.A. (CAL.), D.LITT. (LOND.).	
3-2-36	A. M. Heron, D.SC. (EDIN.), F.G.S., F.R.G.S., F.R.S.E.	
3-2-36	N. G. Majumdar, M.A.	45
3-2-36	Nawab Habib-ur-Rahman Shirwani.	

HONORARY FELLOWS

Date of Election.		
5-2-96	CHARLES ROCKWELL LANMAN. 9, Farrar Street, Cambridge, Massachusetts, U.S.A.	
2-3-04	SIR GEORGE ABRAHAM GRIERSON, K.C.I.E., O.M., PH.D., D.LITT., LL.D., F.B.A., I.C.S. (<i>retired</i>). Rathfarnham, Camberley, Surrey, England.	
6-9-11	KAMAKHYANATH TARKAVAGISA, MAHAMAHOPADHYAYA. 23/1B, Ganon Mitter Lane, P.O. Shambazar, Calcutta.	
5-8-15	SIR JOSEPH JOHN THOMSON, KT., O.M., M.A., SC.D., D.SC., LL.D., PH.D., F.R.S. Trinity College, Cambridge, England.	
6-12-16	G. A. BOULENGER, F.R.S., LL.D. Jardin Botanique de L'Etat, Brussels.	5
4-2-20	SIR AUREL STEIN, K.C.I.E., PH.D., D.LITT., D.SC., D.O.L., F.B.A. c/o Indian Institute. Oxford, England.	
4-2-20	A. FOUCHER, D.LITT. Boulevard Raspail 286, Paris, XVI ^e .	
4-2-20	SIR ARTHUR KEITH, M.D., F.R.C.S., LL.D., F.R.S. Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C. 2.	
4-2-20	R. D. OLDHAM, F.R.S., F.G.S., F.R.G.S. 1, Broomfield Road, Kew, Surrey, England.	
4-2-20	SIR DAVID PRAIN, KT., C.M.G., C.I.E., M.A., M.B., LL.D., F.R.S.E., F.L.S., F.R.S., F.Z.S., M.R.I.A. Royal Botanic Gardens, Kew, Surrey, England.	10
4-2-20	SIR JOSEPH LARMOR, KT., M.P., M.A., D.SC., LL.D., D.C.L., F.R.S., F.R.A.S. St. John's College, Cambridge, England.	
4-2-20	SIR JAMES FRAZER, KT., D.C.L., LL.D., LITT.D. Trinity College, Cambridge.	
4-2-20	J. TAKAKUSU. Imperial University of Tokyo, Tokyo, Japan.	
2-3-21	F. W. THOMAS, C.I.E., M.A., PH.D., <i>Boden Professor of Sanskrit, University of Oxford</i> . 161, Woodstock Road, Oxford, England.	
7-6-22	SIR THOMAS HOLLAND, K.C.S.I., K.C.I.E., D.SC., F.R.S. <i>Principal</i> , University of Edinburgh, Blackford Brae, Edinburgh.	15
7-6-22	SIR LEONARD ROGERS, KT., C.I.E., M.D., B.S., F.R.C.P., F.R.S., I.M.S. 24, Cavendish Square, London, 4.	
7-1-25	STEN KONOW. Ethnographisk Museum, Oslo, Norway.	
7-3-27	RT. HON'BLE THE EARL OF LYTTON, P.C., G.C.S.I., G.C.I.E. Knebworth, Herts, England.	
5-12-27	LT.-COL. SIR T. WOLSELEY HAIG, K.C.I.E., C.S.I., C.B.E., M.A., C.M.G. 34, Gledstanes Road, West Kensington, London, W. 14.	

Date of Election.	
20 5-5-30	DR. R. ROBINSON, D.SC., F.R.S. The Dyson Perrins Laboratory, South Parks Road, Oxford, England.
5-5-30	DR. H. JACOBI, C.I.E. (HON.). 59, Niebuhrstrasse, Bonn, Germany.

CHANGES IN MEMBERSHIP.

LOSS OF MEMBERS DURING 1936.

BY RETIREMENT.

Ordinary Members.

1. Shrinarayan Chokhani. (1926.)
2. J. N. Gupta. (1928.)
3. M. N. Kanjilal. (1924.)
4. S. C. Mallik. (1928.)
5. M. A. Korní. (1930.)
6. J. F. Pessein. (1930.)
7. C. A. Cookson. (1935.)
8. N. E. Parry. (1929.)
9. C. L. Kapoor. (1935.)
10. Nico Reneman. (1928.)
11. Bisvesvar Bhattacharya. (1908.)
12. Amareswar Thakur. (1932.)
13. Baron W. Ow-Wachendorf. (1934.)
14. Nawab M. Muzammil-Ullah Khan. (1921.)
15. Mirza Mohd. (1932.)
16. R. C. Hobart. (1928.)
17. Gopi Chand Chopra. (1928.)
18. Oswald Urchs. (1928.)
19. R. A. S. Thomas. (1936.)
20. Capt. C. J. Moris. (1933.)

BY DEATH.

Ordinary Members.

1. Sir N. D. Beatson-Bell. (1895.)
2. Sir R. N. Mookerjee. (1898.)
3. Puran Chand Nahar. (1906.)
4. Lt.-Col. R. Knowles. (1920.)
5. Sarat Chandra Bose. (1929.)
6. A. C. Woolner. (1906.)

Honorary Fellows.

1. Dr. C. J. H. Nicolle. (1929.)
2. Sir R. N. Mookerjee. (1929.)
3. Dr. C. Snouck Hurgronje. (1927.)

UNDER RULE 38.

1. G. T. Sitling. (1932.)
2. S. B. Pande. (1923.)
3. J. P. Shukla. (1931.)

UNDER RULE 40.

1. Count Bassewitz. (1930.)
2. Andrew Fleming. (1926.)
3. R. Friel. (1919.)
4. R. Y. Jarvis. (1929.)
5. Thornton Jones. (1926.)
6. Hans Koester. (1925.)
7. C. E. Lomax. (1911.)

MEDALLISTS.

ELLIOTT GOLD MEDAL AND CASH.

RECIPIENTS.

- 1893 Chandra Kanta Basu.
- 1895 Yati Bhusana Bhaduri.
- 1896 Jnan Saran Chakravarti.
- 1897 Sarasi Lal Sarkar.
- 1901 Sarasi Lal Sarkar.
- 1904 { Sarasi Lal Sarkar.
- Surendra Nath Maitra.
- 1907 Akshoy Kumar Mazumdar.
- 1911 { Jitendra Nath Rakshit.
- Jatindra Mohan Datta.
- Rasik Lal Datta.
- 1913 { Saradakanta Ganguly.
- Nagendra Chandra Nag.
- Nilratan Dhar.
- 1918 Bibhutibhushan Dutta.
- 1919 Jnanendra Chandra Ghosh.
- 1922 Abani Bhusan Datta.
- 1923 Bhailal M. Amin.
- 1926 Bidhu Bhusan Ray.
- 1927 Kalipada Biswas.
- 1931 T. C. N. Singh.
- 1932 P. N. Das-Gupta.
- 1933 Nirmal Kumar Sen.
- 1934 D. P. Roy Chowdhury
- 1935 Kalipada Biswas.

BARCLAY MEMORIAL MEDAL.

RECIPIENTS.

- 1901 E. Ernest Green.
- 1903 Sir Ronald Ross, KT., K.C.B., C.I.E., K.C.M.G., M.R.C.S., F.R.C.S., D.P.H., LL.D., D.SC., M.D., F.R.S.
- 1905 D. D. Cunningham, C.I.E., F.R.S.
- 1907 A. W. Alcock, C.I.E., M.B., LL.D., F.R.S.
- 1909 Sir David Prain, KT., C.I.E., C.M.G., M.A., M.B., LL.D., F.R.S.E., F.L.S., F.Z.S., M.R.I.A., F.R.S.
- 1911 Carl Diener.
- 1913 William Glen Liston, C.I.E., M.D., D.P.H.
- 1915 J. S. Gamble, C.I.E., M.A., F.R.S.
- 1917 H. H. Godwin-Austen, F.R.S., F.Z.S., F.R.G.S.
- 1919 N. Annandale, C.I.E., D.SC., C.M.Z.S., F.L.S., F.R.S., F.A.S.B.
- 1921 Sir Leonard Rogers, KT., C.I.E., M.D., B.S., F.R.O.P., F.R.C.S., F.R.S.
- 1923 Sir Samuel Christophers, KT., C.I.E., O.B.E., F.R.S., F.A.S.B., M.B., LT.-COL., I.M.S.
- 1925 J. Stephenson, C.I.E., B.SC., M.B., CH.B., F.R.S., F.R.C.S., F.R.S.E., LT.-COL., I.M.S.
- 1927 S. W. Kemp, B.A., D.SC., F.R.S., F.A.S.B.
- 1929 Sir Albert Howard, KT., C.I.E., M.A., F.A.S.B.

- 1931 R. B. Seymour Sewell, C.I.E., M.A., SC.D. (CANTAB.),
M.R.C.S., L.R.C.P., F.Z.S., F.L.S., F.A.S.B., F.R.S., LT.-COL.,
I.M.S.
1933 R. Row, O.B.E., D.SC.
1935 B. Sahni, M.A., SC.D. (CANTAB.), D.SC., F.G.S., F.A.S.B.
-

SIR WILLIAM JONES MEMORIAL MEDAL.

RECIPIENTS.

- 1927 Sir Malcolm Watson, KT., LL.D. (HON.), M.D., C.M., D.P.H.
1928 Sir George A. Grierson, K.C.I.E., O.M., PH.D., D.LITT., LL.D.,
F.B.A., HON. F.A.S.B., I.C.S. (*retired*).
1930 Dr. Felix H. D'Herelle.
1932 Dr. C. Snouck Hurgronje.
1934 Rai Sir Upendra Nath Brahmachari, Bahadur, KT., M.A.,
M.D., PH.D., F.S.M.F., F.A.S.B.
-

ANNANDALE MEMORIAL MEDAL.

RECIPIENTS.

- 1927 Fritz Sarasin.
1930 Dr. Charles Gabriel Seligman, M.D., F.R.C.P., F.R.S.
1933 Dr. Eugène Dubois.
1936 Dr. John Henry Hutton, C.I.E., I.C.S., M.A., D.SC., F.R.A.S.B.
-

JOY GOBIND LAW MEMORIAL MEDAL.

RECIPIENTS.

- 1929 Max Weber.
1932 Dr. Ernst J. O. Hartert, PH.D.
1935 Prof. Leo Semenowitch Berg.
-

PAUL JOHANNES BRÜHL MEMORIAL MEDAL.

RECIPIENTS.

- 1931 Rev. Ethelbert Blatter, S.J.
1934 Isaac Henry Burkill, M.A.
-

INDIAN SCIENCE CONGRESS MEDAL, CALCUTTA.

RECIPIENT.

- 1935 Meghnad Saha, D.SC., F.R.S., F.A.S.B.
-

PROCEEDINGS OF THE ORDINARY MONTHLY MEETINGS, 1936.

JANUARY.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 6th, at 5-30 P.M.

PRESENT.

LT.-COL. R. KNOWLES, C.I.E., B.A., M.R.C.S., L.R.C.P., I.M.S., Vice-President, in the Chair.

Members :

Barua, Hon'ble R.B. K. L.
Bhandarkar, Dr. D. R.
Bogdanov, Mr. L.
Brown, Mr. Percy
Calder, Mr. C. C.
Chakravarti, Mr. C.
Darbari, Mr. M. D.
Dey, Mr. Mukul
Dodds, Mr. W. K.
Ezra, Sir David
Ghuznavi, Mr. I. S. K.
Haq, Mr. M. Mahfuz-ul
Heron, Dr. A. M.

Hobbs, Mr. H.
Hora, Dr. S. L.
Hosain, Dr. M. Hidayat
Howland, Mr. Felix
Jack, Hon'ble Mr. Justice R. E.
Majumdar, Mr. N. G.
Manen, Mr. Johan van
Neogi, Dr. P.
Ow-Wachendorf, Baron W.
Rao, Mr. U. Shanker
Singhi, Mr. Bahadur Singh
Sircar, Mr. Ganapati
Stapleton, Mr. H. E.

Visitors :

Barua, Mrs. K. L.
Barua, Mr. N. L.
Ezra, Lady
Ghuznavi, Miss Z.

Giskra, Baroness
Mandal, Mr. B. M.
Saraswati, Mr. S. K.
Stapleton, Mrs.

and another.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of six presentations of books, etc., which had been placed on the table for inspection.

The General Secretary announced that the following candidates would be balloted for as Ordinary Members :—

(1) *Pulley, Owen C.*, Lieut.-Colonel, Indian Army (Retd.), The Palace, Agartala, Tripura State.

Proposer : Sir L. L. Fermor.

Seconder : Johan van Manen.

(2) *Berkeley-Hill, Owen Alfred Rowland*, M.A., M.D., B.Ch. (Oxon.), M.R.C.S. (England), D.T.M. (London), Lt.-Col., I.M.S. (Retd.), 'Station View', Ranchi, B. & O.

Proposer : N. Barwell.

Seconder : Johan van Manen.

(3) *Anderson, His Excellency the Rt. Hon'ble Sir John*, P.C., G.C.B., G.C.I.E., Governor of Bengal, Calcutta.

Proposer: Sir L. L. Fermor.

Seconder: Sir U. N. Brahmachari.

(4) *Brocke, Alfred G.*, D.Sc. (Doctor Philosophiae Naturalis) (Jena), Branch Manager, Pharmaceutical Department, 'Bayer', 11, Store Road, Ballygunge, Calcutta.

Proposer: Johan van Manen.

Seconder: Sir U. N. Brahmachari.

The General Secretary reported that an application for Institutional Membership had been received from:—

(1) Librarian, Islamia College, Peshawar.

which had been accepted by the Council.

The General Secretary reported the following loss of membership, since the previous meeting, by resignation:—

(21) V. Bhattacharya (An Ordinary Member, 1922).

(22) G. F. Berthoud (An Ordinary Member, 1929).

(23) N. J. Judah (An Ordinary Member, 1924).

(24) J. F. Snaith (An Ordinary Member, 1926).

The General Secretary reported that the election of:—

(1) B. M. Sen (Elected on 3-6-35),

had become null and void, under Rule 9.

The General Secretary reported that there had been no withdrawals of application, since the previous meeting.

Papers were presented, and Exhibits were shown and commented upon, as detailed below.

The Chairman announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

The Chairman announced that a meeting of the Medical Section would be arranged to be held early in February of which due notice would be given to the members.

The following paper was read:—

1. H. E. STAPLETON.—*The Countess Amherst Collection of Assamese Coins.*

In July 1934, Sotheby and Co., the well-known London Auctioneers, advertised for sale, among other lots, a collection of 12 Gold and 72 Silver coins which were listed as 'the Countess Amherst Collection of Assamese Coins'. A MS. description of these coins by Dr. Horace Hayman Wilson, Secretary of the Asiatic Society of Bengal from 1811-1833, was included in the lot, from which it appeared that this collection was probably made shortly after the first Burmese war of 1824-26 at the instance of the then Governor-General, Lord Amherst, who was created Earl Amherst of Arakan after the conclusion of the war. It seems likely, from Dr. Wilson's note

of 1828, that the agent employed by Lord Amherst was Capt. Neufville, Intelligence Officer during the war, and, later, Commandant of the Assam Light Infantry.

The exhibitor was fortunately able to purchase the collection on behalf of the Government of Assam, and subsequent examination showed that it included at least 10 Gold and 38 Silver Assamese coins that were new to the Provincial Cabinet at Shillong. In the accompanying plates, illustrating the paper, the following previously undescribed coins have been figured: Half and Quarter rupees of Śiva Simha and Queen Ambika; $\frac{1}{2}$ -rupee of Rajeshvara in Nagri script; two rupees of Gaurinātha with curious dates; $\frac{1}{4}$ -rupee of Bharatha; Mohur of Brajanātha of 1740 *Śāka*; and finally, a $\frac{1}{4}$ -rupee of Jogeshvara of 1743 *Śāka*.

Mr. Stapleton exhibited photographs of certain of the coins that had been taken by the Survey of India for a Plate to illustrate this paper and he briefly described the chaotic condition of Assam during the period (1780-1821) when these coins were struck. This might account for the strange dates on two of the coins.

Specimens of Dr. H. H. Wilson's signature when Secretary of the Society (from the Society's records) were also exhibited to show the identity of these with the signature at the end of the MS. Note of 1828, and Mr. Stapleton presented a typed copy of the Note for record among the Society's papers.

Rai Bahadur K. L. Barua thanked Mr. Stapleton, on behalf of the Shillong Coin Committee, for acquiring the Amherst collection of Assamese coins for the Shillong Cabinet. He said that he has not yet seen the coins and examined them and so he is not in a position to explain the curious dating of some of the coins as mentioned by Mr. Stapleton.

As regards the coins minted by the four queens of king Siva Singha, the fact is that on the advice of astrologers he abdicated the throne in favour of his four queens in order to avoid the effects of *Chutrabhanga Yoga*. During this period the four queens, Phuleswari and Pramatheswari as *Mahishi* (Chief Queen), and Ambika and Sarveswari as *Vallabha* (Beloved one) minted coins.

Both Sarvananda and Bharatha Singha were leaders of the Matak rebellion during Gaurinath Singha's reign. These usurpers also minted coins. With British help Gaurinath was subsequently restored to authority.

Mr. N. G. Majumdar exhibited four rare *Koch* coins recently presented to the Indian Museum coin cabinet, through the intermediary of Mr. Van Manen, by the Archbishop of Calcutta.

Mr. Van Manen explained how these coins had been submitted to him for determination on behalf of His Grace the Archbishop. They had been found in the Jalpaiguri district and His Grace had very kindly acted on his suggestion to present them to the Museum cabinet.

Mr. H. E. Stapleton asked for a speedy description from Mr. N. G. Majumdar of the 4 *Koch* coins that had been obtained through the kindness of the Roman Catholic Prelate. Similar coins were described by Blochmann, about 1875, and it would be a good thing if a note on the new coins could be prepared for publication in the next Numismatic Supplement, together with the paper on the Amherst collection.

Rai Bahadur K. L. Barua said that *Koch* coins shown by Mr. N. G. Majumdar were minted by Nara Narayan and his son Lakshmi Narayan. They were Kings of Kamarupa, which, in the sixteenth century A.D..

included the western part of the modern Assam valley, as well as Kuch Behar, Jalpaiguri, Rangpur and Mymensingh.

The following exhibit (deferred from the previous meeting) was shown and commented upon :—

1. M. MAHFUZ-UL HAQ.—*A note on a rare MS. of al-Aghrād-al-Tibbiya (an encyclopædia of medical science).*

An extremely valuable manuscript of an elaborate thesaurus of medical science, entitled al-Aghrād-al-Tibbiya, which was compiled by Ismā'il bin al-Ḥusain al-Jurjānī at the instance of Majd-ud-dīn Abū Muḥammad al-Ṣāhib bin Muḥammad al-Bukhārī, a minister of Abul Muẓaffar Atsiz bin Khwārizm-shāh (1127 A.D. to 1156 A.D.). The book is divided into two volumes, called *Bakhsh*.

The MS. was transcribed by a distinguished Persian calligraphist, Sayyid 'Alī Muḥammad al-Ḥusainī, on the 1st Sha'ban, 947 A.H., and contains on the fly-leaf the autographs and seals of (i) the Khān Khānān, 'Abur Raḥīm (d. 1036 A.H.), a grandee of the emperors Akbar and Jahāngir and of (ii) Fathullāh, son of Hakīm Masīh-ul Mulk Abul Fath, of Gilān, a well-known physician of the court of the Emperor Akbar.

The note, accompanying the exhibit, contains a brief *résumé* of the contents of the work, a discussion on the value of the manuscript, etc.

The MS. belongs to Khān Bahādur Mawlawī Muḥammad Yāsīn of Arrah.

Professor M. Mahfuz-ul Haq explained his exhibits as follows :—

The book, *al-Aghrād al-Tibbiya wal Mabāhiṭh al-'Alā'iyya* (الأغراض الطبية والمباحث العلائية) was composed about the middle of the 12th century, A.D., by Ismā'il bin al-Ḥusain al-Jurjānī (d. 531 or 535-1137 or 1141), the author of the celebrated *Dhakīra-i-Khwārizmshāhī* and other important works on medical science, which are among the earliest works on Medicine preserved in the Persian language.

The author lived at the court of the Kings of Khwārizm for whom he composed his first great work, the *Dhakīra*, in 504-1110-1111. He dedicated it to Quṭb-ud-Dīn Muḥammad (490-521-1097-1127), the first King of the dynasty who succeeded with the title of *Khwārizm Shāh*. Some years later, al-Jurjānī wrote the present work, *al-Aghrād*, at the instance of Majd-ud-Dīn Abū Muḥammad al-Ṣāhib bin Muḥammad al-Bukhārī, the talented minister of Abul Muẓaffar Atsiz bin Khwārizm-Shāh (1127-1156, A.D.).

Al-Aghrād is a compendium of medical science and contains a discussion on almost all the subjects connected with the theory and practice of medicine as was known in Irān and Turkeṣtān in the 12th Century A.D. The author is himself conscious of the value and importance of the work as appears from the following remarks which he has made in the Introduction :—

' (Although my book is) small in bulk yet big in contents and although it is small in size yet there is hardly any problem or subject which is outside its scope of treatment; rather I have discussed and deliberated on important and delicate problems and arrived at definite conclusions. This

humble self is bold enough to claim that there is not a single compendium in existence which possesses such perfection as this one.'

The book is preceded by a list of contents which is rather rare in Persian works. It appears from the list that the book is divided into two main sections and each section is subdivided into 19 and 26 *Guftārs* (or, Discourses) respectively, while each *Guftār* is further subdivided into several sub-sections called *bāb* or *juzv*.

Among the subjects discussed in the book are : (1) Definition of the science of medicine, its theory and practice ; the *mizāj* (temper) ; the humours (akhlāt) etc. 19 Sections. (2) Identification of 'single bodies', 7 sections. (3) Discussion on 'compound bodies', 17 sections. (4) Discourse on the faculties, 5 sections. (5) Health and Ill-health and the rules of their identification, 5 sections. (6) Pulses, 20 sections. (7) Breathing, etc.

The second section, called بخش دوم comprises the *Materia Medica* ; the names of limbs and their peculiar diseases, their causes ; their diagnosis and, lastly, the *Pharmacopœia*.

The MS. was transcribed by an Iranian Calligraphist, Sayyid 'Alī Muḥammad al-Ḥusaini on the 1st Sha'bān, 949 A.H. (1542 A.D.).

The text is written in beautiful *Nasta'liq* within gold-ruled borders and contains two beautiful illuminated head-pieces at the beginning.

Apparently, the MS. came to India during the reign of the Emperor Akbar and was formerly in the possession of Ḥakīm Faṭḥullāh, one of the court physicians of the Emperor Akbar and about whom al-Badā'oni says : 'He has read many works on medicine and his knowledge of Astronomy also is great'. The Ḥakīm was the son of a yet more distinguished physician of the Emperor Akbar : Ḥakīm Masīḥ-ud-Dīn Abul Faṭḥ of Gilān. Ḥakīm Faṭḥullāh enjoyed the rank of a commander of 1000 under Jahāngīr (Tuzuk, i, p. 34). It appears that Jahāngīr was annoyed with him on account of his sympathy with Khusraw (*Ma'athir-ul-Umarā*, i, p. 561) and was paraded through the streets of the capital on an ass, with his front towards the tail. He is reported to have been killed by Jahāngīr (C/o. 'A'in, i, p. 425). The autograph note of the Ḥakīm runs as follows :—

اللّٰه اکبر - داخل عاربت خانه اقل عباد فتح اللّٰه بن ابوالفتح گیلانی شد *

Translation :

Allāh-o-Akbar! (This book) entered in the temporary possession of the humblest of slaves (of God). Faṭḥullāh bin Abul Faṭḥ Gilānī.

There are two seals of the Ḥakīm which read فتح اللّٰه بن ابوالفتح (Faṭḥullāh son of Abul Faṭḥ)

The second autograph is of the great Khān Khānān, Abdur Raḥīm (d. 1036-1627) the great general of the emperor Akbar who was a great patron of poets, scholars, painters and calligraphists, and who had one of the finest libraries that it has ever been the fortune of any Indian grandee to possess.

Unfortunately, a portion of the fly-leaf on which the autograph note appears has been cut out, while a portion is worm-eaten, hence it is not possible to give a complete reading of the note. I have been able to decipher it as follows :—

اللّٰه اکبر - در احمدنگر از قاضی افضل مدیه شد - بتاریخ سنه هزار و دو

(or ده) ... محمد [عبد الرحیم] ابن [محمد بیرم]

Translation : *Allāh-o Akbar*. At Ahmadnagar (Qāḍi Afdal presented the book to me), in the year One Thousand and Two (or Ten) (written by) Muḥammad ('Abdur Raḥīm) son of (Bayram).

The fly-leaf also contains a seal of the Khān Khānān. It reads as follows :—

خان خانان مرید اکبر شاه

(Khān-i-Khānān, *murīd* of Akbar Shāh).

The MS. belongs to Khān Bahādur Mawlawī Muahmmad Yāsīn, retired Professor of Persian, Patna College.

Mr. H. E. Stapleton suggested that possibly, if the manuscript were examined, the contents would be found to be a summary of Ibn Sīnā's *Al-Qānūn* which was written early in the 11th century A.D.

Mr. Van Manen asked whether the book has ever been published and how many other MS. copies of it were known.

Professor *Mahfuz-ul Haq* replied that he knew of only one complete and one incomplete manuscript of *al-Aghrād* which are both preserved in the India Office Library, London. He was not aware that the work had ever been published.

Professor P. Neogi said :—

The date of the authorship of the manuscript, the 12th century, would be important in writing the history of the Muhammadan system of medicine including alchemy, as practised in India during the Muhammadan period of Indian history. From the period of the Muhammadan conquest of India two parallel systems, Hindu and Muhammadan, of medicine and alchemy prevailed in India, and they are even existing at the present day. The history of the Hindu system is pretty well known and many standard Hindu medical and alchemical works have been published. It is high time that the history of the Muhammadan system should be written by some physician versed in Arabic and Persian. When such a history is written the present manuscript ought to find a proper place in it as it professes to give information on the state of knowledge of medical science in the 12th century.

The following additional exhibits were shown and commented upon :—

2. MAHARAJA P. C. TAGORE.—*Panel representing Sir William Jones translating Shakuntala.*

Maharaja Sir P. C. Tagore has commissioned Mr. K. C. Roy to design a panel representing Sir William Jones, the founder of the Asiatic Society of Bengal, in a manner symbolical of his activities. Mr. Roy has represented Sir William Jones sitting in the open air beneath a plantain tree before a desk with some Sanskrit manuscripts deposited near him. Facing him are three Pandits with whom he is working at the translation of an Indian book. The scene is entitled 'Sir William Jones translating Shakuntala' and is a very happily conceived scene commemorating the work of the brilliant scholar to whom the Asiatic Society of Bengal owes its existence. The panel exhibited in the plaster model is to be converted into marble and measures about two by three feet. Maharaja Tagore has announced his intention to present the plaster original to the Society after the completion of the marble copy.

Mr. Van Manen explained the exhibit on behalf of Maharaja Tagore and said that he surely expressed the feelings of the meeting in heartily

appreciating the Maharaja's generosity in presenting the original panel to the Society. Maharaja Tagore was one of the very old members, and it was apt that this artistic representation of the founder of the Society should be preserved in, and adorn, its rooms as a gift of this distinguished veteran in the ranks.

3. SUNDER LAL HORA.—*Manuscript Drawings of Indian Fish and other animals recently acquired by the Asiatic Society of Bengal.*

In March 1935, information was received from Prof. John Percival of Reading, England, that he had in his possession a collection of water-colour drawings of Indian plants, fishes and other animals, but he did not know the name of their original owner. It is, however, known that they were at one time in the possession of the Sibthorp family, whose ancestor was John Sibthorp, Professor of Botany in the University of Oxford towards the end of the 18th century.

These drawings, 146 of fish and 53 of other animals, have now been acquired by the Society.

At the top of each drawing is written in pencil the scientific or the vernacular Indian name. In addition there are notes written in an old system of shorthand. Professor Percival compared these drawings with other drawings of plants and animals in the British Museum and found that 'Notes written in the same kind of shorthand as on mine, I have discovered on several of the drawings of Indian plants bequeathed to the British Museum (Bloomsbury) by General Hardwicke; the comments there make it clear that they were not written by Hardwicke, but apparently by the owner of my collection of drawings'.

The paper of most of the drawings has a water-mark dated 1794, while some are dated 1798. This shows that the drawings were made towards the end of the eighteenth century. From a comparison of the writings of Hardwicke, Martin, Fleming, Buchanan, Roxburgh and other Indian naturalists of that period, Prof. Percival concludes that the writing on his drawings is not that of any of these.

From a remark by Hardwicke in his 'Narrative of a Journey to Srinagur' (*As. Res.*, VI, p. 367, 1796) Prof. Percival concluded that they may have belonged to Mr. R. Bruce, but he could not find much information regarding this gentleman. Professor Percival's guess may prove to be true, for there is no doubt that Hardwicke and Bruce were close friends, one of the Indian fish is named by Hardwicke as *Balitora brucei* and published by Gray under that name. From enquiries made at the Imperial Record Department, it is learnt that 'one Mr. Robert Bruce applied on the 5th August, 1792, for the necessary passports to proceed along the river with the purpose of visiting certain places up-country. This Robert Bruce was an Ensign at Fort William, became Captain in 1786, Aide-de-Camp to Col.

G. B. Eyres in 1787, Secretary to the same in 1791, Major in 1792 and Lt.-Col. in 1799'.

Now that the drawings are available in India, their history will be worked out in greater detail and the results presented to the members of the Society in due course. The greatest importance of these drawings lies in the fact that they add a new chapter to the history of Indian ichthyology. So far Hamilton (once Buchanan) has been regarded as the first person who made a systematic study of the freshwater fishes of India, but the drawings under report show that someone had an equally keen interest in the study of these fishes before him.

With the new acquisition, the Asiatic Society of Bengal now possesses a unique collection of manuscript drawings of Indian fishes of great historic value.

All the MS. drawings of fish in the possession of the Society were exhibited.

Dr. Hora explained his exhibit in detail and passed round for inspection various volumes, containing manuscript drawings of fish, belonging to the Society's library.

Mr. H. E. Stapleton suggested that it might be desirable to enquire whether the Bruce, who had been mentioned as the possible artist of the first drawings, was connected with the planter brothers of Dibrugarh, Assam, whose names were commemorated in the Bruce Foundation for Anglo-Indian girls, the fund of which is administered by the Director of Public Instruction, Bengal.

4. THE GENERAL SECRETARY.—*A palm-leaf Manuscript of the Dronaparvan of the Mahābhārata in old Bengali script.*

Mr. Van Manen said that of late he had acquired several interesting Sanskrit MSS. for the Society. In due course descriptions would be published. In this meeting he would exhibit one particular MS. which was of special interest to Bengal. It was a complete Dronaparvan, the Sanskrit text in Bengali script on palm leaves. The MS. was by far the oldest Mahābhārata MS. in the possession of the Society. Though the Society's collection contained 240 Mahābhārata MSS. most of them, if not all, were probably at least two centuries younger than the present MS. The speaker would not give any further details at the present occasion which was only utilised to draw attention to the interesting acquisition.

Mr. Chintaharan Chakravarti said :—

This is a valuable accession to the MS. Library of the Society which already possesses a number of old dated MSS. in the Bengali script, facsimile pages from some of which have been reproduced by the late Raja Rajendralal Mitra in his *Notices of Sanskrit MSS.* Though not dated the present MS. appears, on a cursory glance, to be quite old, perhaps from four to five hundred years. Discovery of old MSS. of the epics and Purāṇas in the Bengali script has of late been reported from different parts of Bengal. I have described two MSS. of the *Harivaṃśa* and a section of the *Mahābhārata* (*Adiparvan*) copied in the latter half of the fifteenth and the beginning of the sixteenth century (*Descriptive Catalogue of Sanskrit MSS. in the Vāṅṭīya Sāhitya Paṇṣat, Calcutta, 1935, Introduction p. V*). The Dacca University Library also possesses a number of similar MSS. (*Indian Antiquary, 1926, p. 121*).

These MSS. are especially important in view of the fact that old Bengali MSS. have occasionally been found to contain more correct and

better readings. It will be worth while to compare carefully the paleography of the MS. acquired by the Society with that of the old dated MSS. in the Society to determine its date more definitely.

Rai Bahadur K. L. Barua inquired whether the manuscript contained a colophon.

Mr. Chakravarti replied that there were only ordinary chapter colophons, but no date, and no name of the scribe, were given.



FEBRUARY.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 3rd February, 1936, immediately after the termination of the Annual Meeting for the election of Ordinary Members and the transaction of business.

PRESENT.

LT.-COL. R. KNOWLES, C.I.E., B.A., M.R.C.S., L.R.C.P.,
I.M.S., F.A.S.B. Vice-President. in the Chair.

Members :

Barwell, Lt.-Col. N.
Bhose, Mr. J. C.
Brahmachary, R.B. S. C.
Calder, Mr. C. C.
Chakravarti, Mr. C.
Chatterji, Dr. S. K.

Chopra, Brevet-Col. R. N.
Hosain, Dr. M. Hidayat
Hora, Dr. S. L.
Majumdar, Mr. N. G.
Manen, Mr. Johan van
Mukherjee, Dr. J. N.
Singhi, Mr. B. S.

The minutes of the last meeting were read and confirmed.

The General Secretary announced that the presentation of books, etc., received during the last month would be exhibited in the next Monthly Meeting.

The General Secretary announced that the following candidates would be balloted for as Ordinary Members :—

(5) *Catto, Sir Thomas, S., Bart.*, Merchant and Banker, Andrew Yule & Co. Ltd., 8, Clive Row, Calcutta.

Proposer : Sir Lewis Fermor.
Seconder : Johan van Manen.

(6) *Seetharamiah, P.*, Clerk, District Commercial Office, B.-N. Ry., Khargpur, Midnapur District.

Proposer : S. C. Seal.
Seconder : M. Z. Siddiqi.

(7) *Flury, Ernest Charles*, Merchant, Manager of Messrs. Volkart Brothers, 11, Clive Street (Post Box No. 606), Calcutta.

Proposer : Johan van Manen.
Seconder : R. Chanda.

The General Secretary reported that there had been no loss of membership, since the previous meeting, by death.

The General Secretary reported the following loss of membership, since the previous meeting, by resignation :—

- (1) Shrinarayan Chokhani (An Ordinary Member, 1926).

The General Secretary reported that there had been no lapses of election, since the previous meeting, under Rule 9.

The General Secretary reported that :

- (1) Lt.-Col. O. C. Pulley,

who was elected an Ordinary Member in the last meeting has withdrawn his application for membership.

The Chairman announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

The Chairman announced that a joint meeting of the Medical Section of the Society, the Calcutta School of Tropical Medicine and the All-India Institute of Hygiene and Public Health would be held in the Lecture Theatre of the Calcutta School of Tropical Medicine, at Central Avenue, on Tuesday, the 4th February, 1936, at 3 P.M., when the following paper would be read :—

The Mechanism of the Hæmolysis in malarial hæmoglobinuria of Monkeys by Dr. K. V. Krishnan.



MARCH.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 2nd, at 5-30 P.M.

PRESENT.

SIR DAVID EZRA, KT., F.Z.S., M.B.O.U., Vice-President, in the Chair.

Members :

Brahmachari, Sir U. N.
Brown, Mr. Percy
Calder, Mr. C. C.
Chakladar, Mr. H. C.
Chakravarti, Mr. C.
Chanda, R. B. R.
Ghose, Mr. T. P.

Guha, Dr. B. S.
Heron, Dr. A. M.
Hobbs, Mr. H.
Hora, Dr. S. L.
Hosain, Dr. M. H.
Mancn, Mr. Johan van
Prashad, Dr. Baini
Wadia, Mr. D. N.

Visitors :

Acharji, Mr. M. N.

Hafiz, Mr. H. A.
Saraswati, Mr. S. K.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of nine presentations of books, etc., which had been placed on the table for inspection.

The General Secretary announced that the following candidates would be balloted for as Ordinary Members :—

(8) *Thomas, Richard Arnold Shyring*, Assistant, Messrs. J. Thomas & Co., 8, Mission Row, Calcutta.

Proposer : R. Knowles.

Seconder : J. Gladstone.

(9) *Chatterjee, Manomohan*, B.Sc. (Cal.), A.R.C.S., D.I.C., Ph.D. (Lond.), Professor of Geology, Presidency College ; 170/2, Lower Circular Road, P.O. Entally, Calcutta.

Proposer : D. N. Wadia.

Seconder : A. M. Heron.

(10) *Chatterji, Mrs. Tuhinikā*, M.A., Kāvya-tirtha, Research Scholar, Examiner, Calcutta University ; 5, Wood Street, Calcutta.

Proposer : Sir U. N. Brahmachari.

Seconder : Johan van Manen.

The General Secretary reported the following loss of membership, since the previous meeting, by death :—

(1) Rev. Sir N. D. Beatson-Bell (A Life Member, 1895).

The General Secretary reported the following loss of membership, since the previous meeting, by resignation :—

(2) J. N. Gupta (An Ordinary Member, 1928).

(3) M. N. Kanjilal (An Ordinary Member, 1924).

(4) S. C. Mallik (An Ordinary Member, 1928).

The General Secretary reported that there had been no lapses of election, since the previous meeting, under Rule 9.

The General Secretary reported that there had been no withdrawals of application, since the previous meeting.

The General Secretary reported the constitution of the various standing Committees of the Society to be as follows :—

Finance Committee :

President	}	<i>Ex-officio.</i>
Treasurer		
General Secretary		
Dr. J. N. Mukherjee.		
Dr. Baiji Prashad.		

Library Committee :

President	}	<i>Ex-officio.</i>
Treasurer		
General Secretary		
Philological		
Jt. Philological		
Biological		
Phys. Science		
Anthropological		
Medical		
Library		

Publication Committee :

President		
Treasurer		
General Secretary		
Philological	} Secretaries	} <i>Ex-officio.</i>
Jt. Philological		
Biological		
Phys. Science		
Anthropological		
Medical		
Library		

Papers were presented and Exhibits were shown and commented upon, as detailed below.

The Chairman announced the result of the ballot for the election of Ordinary Members and declared all candidates duly elected.

The Chairman announced that no meeting of the Medical Section had yet been arranged to be held during the current month.

The following paper was read :—

1. SARASI KUMAR SARASWATI.—*Notes on a fourth Tour in the district of Dinajpur.*

Report on the antiquarian remains found at various villages in the district of Dinajpur: Itahar, Bhadrasila, Bankur, Sonapur, Yogipara, Baigungaon, Shadea, and Dhulohar.

Summary : It is apparent that the area traversed during this short trip was once full of ancient and prosperous settlements adorned with imposing palaces, beautiful temples, and large tanks. Its ancient magnificence is now a thing of the past, and its history has been lost and buried in oblivion. The whole tract is now a mere woodland of ruined mounds and half-silted-up tanks. The relics that lie above ground fully demonstrate the antiquity and importance of the different sites, which, if properly explored and excavated, would yield valuable and interesting results for the history of this part of the country, and, it may be, even for the history of Bengal.

Mr. Saraswati said :—

The following report on the antiquarian remains in the western part of the Dinajpur district concludes the two previous papers, embodying the results of three previous tours, published in an issue of the Journal of the Society. In the present trip as many as 11 or 12 places have been visited, each bearing an ancient appearance with its jungle-clad mounds full of bricks and stones, remnants of old and large tanks and large number of stone images and fragments of images lying scattered throughout. To name only a few, there is the village of Itahar, which literally means the 'string of bricks', perhaps from numerous old bricks that are to be had all around. It was a large and flourishing village and several ruined mounds, tanks and images are now all that remain of its ancient splendour. Of the many interesting images mention should be made of the colossal image of Vishnu of

exquisite decorative workmanship recovered in 1933 for the Indian Museum and the pedestal of an image of Vishṇu of very rare type, acquired for the Rajshahi Museum. The last represents Yogāsana Vishṇu, an extremely rare type, of which no other specimen, so far as I am aware, have been noticed from Bengal. Next there is the village of Bhadrāsila, only a mile to the east of Itahar, undulating all through and containing large but low mounds and abundance of north and south tanks. Of the images lying uncared for in the different village *thāns* I should mention one of Śiva Aghora-Rudra and another, a fine but mutilated image, of the river goddess Gaṅgā. The name Bhadrāsila is interesting and there is no doubt as regards its antiquity. The extensive elevated tracts as hard as rammed concrete from accumulation of brickbats on the surface, the finds of numerous old bricks on a little digging, fragments and images lying scattered around the village, abundance of north and south tanks and lastly the peculiar name of the village, which at once brings to our mind the famous Takṣasila, all point to an unmistakable antiquity of the place of which further traces and materials for its ancient history are expected to come up on a proper exploration and excavation of the site. Bankur is another village, some 3 miles north-east of Itahar and it possesses a life-size image of Sūryya, remarkable for its elegant execution and perfect preservation. Sonapur, a little to the north of Bankur, is a large village containing several mounds, remains of brick-paved streets and a rather fair number of images. Of these, two sandstone images of Sūryya of early Pāla period, an image of Revanta, the son of Sūryya, worshipped by the local Muhammadans as Ghodapir, and a fine black basalt image of Kārttikeya, the god of war, may be mentioned in this brief note. Next I should mention the village of Yogipara, containing several big images, of which one of the fierce god Śiva-Bhairava, worshipped as Śmaśānakalikā, and another of Buddha locally known as 'Bhairō Bābā' and with a reputation for curing deafness, are worth noticing here. Shadea, another big village on the river Chiramati, has also an ancient appearance with small mounds and brick-strewn undulating tracts. The two shrines—one on a mound by the river bank and the other within the village—contain innumerable images and fragments. Last, though not the least, I come to the village of Dhulohar, 4 or 5 miles to the west of Itahar. The site—a vast elevated area of about 2 miles by 3 miles covered with dense jungle—appears to be an important one. The slopes of this elevated tract are gradually coming under plough and are strewn over with brickbats and potsherds. The old people of the locality affirm that in the jungle there are numerous old tanks and innumerable bricks and stones. Just to the east of the site there is a vast tank, about half a mile in length. From it two ditches, one from the northern end and the other from the southern, issue forth and join the Kulik river, running by the west side of the site, thus encircling and forming a sort of fortification for the entire area. Paved brick on edge streets can be traced and there are the remains of a *pucca ghat* on the river bed. A small mound on the western slope of the site, recently cleared by the villagers, and another on the opposite bank of the river are both full of bricks and stones. According to local tradition the site of Dhulohar was the capital of one Dhulpat Raj. The highest peak of that elevated site is known to be the palace of that monarch. Indeed, the tradition is so strong that it is said that an image of Vishṇu found in that area bore the name of Dhrupāl Rājā. Dhulpat Raj, they say, is the corrupted form of Dhrupāl Rājā, who was alleged to be connected with the Pālas of Bengal. The image in question, however, could not be found and there are grave doubts whether any such image bearing such a name had ever been found.

Only a small fraction of the remains can but be noticed in this note and before I finish I should like to draw your attention to the utterly deplorable state in which the relics are lying in these inaccessible sites. A prey to the inclemency of climate, weather and rank vegetation of the

province and to the sheer vandalism of man, these priceless treasures are gradually being lost to us. An instance or two would suffice to show how they gradually disappear. The beautiful image of Gaṅgā at Bhadrāsila was to a great extent entangled in the roots of a tree and it was with much difficulty that I was able to extricate it. But for this timely intervention the image, I am afraid, would have broken to pieces under pressure of the tree within a year or two and a fine specimen of Bengal art would have been lost for ever. The people are so superstitious and apathetic that they would not do anything to save their deity from ruin and destruction. To them the interference on my part to extricate the image was a sacrilege and instead of helping me in the least the crowd that gathered waited breathless for some miraculous thing to happen to prevent me from performing this irreligious act. Let me cite another case of wanton destruction. In my third trip (1933) I visited Surohor, 2 miles south of Shadea, and Mahendra, just opposite to Surohor beyond the river, where I found numerous sculptures of which a few proved to be quite unique. In the present trip (1935) I again visited the two places and was shocked to find almost all the pieces, that I found entire during my former visit, battered to pieces. Strange to say, the local people who regard these stones as so many properties of the village and would not allow any one to remove them elsewhere, could give no information as to who perpetrated this heinous crime. The almost total destruction leaves no doubt that it was intentional and the work of some modern fanatic. It is apparent that the iconoclastic spirit of the early invaders are not yet dead. Under these circumstances—inclemency of nature and inclemency of man—the relics lying scattered and uncared for in the distant villages are being lost to us and it is time that we should strive in earnest for their acquisition to a public collection or at least for their better preservation and protection.

It is apparent that the area traversed during this short trip was once full of ancient and prosperous settlements adorned with imposing palaces, beautiful temples and large and clear tanks. Its ancient magnificence is now a thing of the past. The whole history has been lost and buried in oblivion. The whole tract is now a mere woodland of ruined mounds and half-silted-up tanks. The relics that lie above ground fully demonstrate the antiquity and importance of the different sites, which, if properly explored and excavated, are expected to yield valuable and interesting results for the history of this part of the country and, it may be, even for the history of Bengal.

Mr. H. Hobbs asked what reason could be given for the ruin that seems to have come over most parts of India, where beautiful monuments are discovered in out-of-the-way places. Why is it that in India marble palaces seem to breed mud huts? The ruin could hardly have been effected by invading armies. Was it due to agricultural depression, disease, or the neglect, due to the load of the climate being too heavy for the people to bear?

Mr. *Saraswati* replied that in Java, which had also been a prey to foreign invasions there was no such total ruin as in Bengal. In his opinion foreign invasions were not the sole cause of the ruin and disappearance of ancient Bengal monuments. In Bengal, natural agencies such as humid climate, excessive rainfall, change in the course of the rivers, rank vegetation, and also the fact that in Bengal ancient edifices were mostly built of bricks, contributed more or less to the desertion and ruin of older monuments. But there is still the factor of the foreign invaders, who pulled down many an edifice, and razed to ground many ancient cities for building materials, to account for the loss and ruin of older monuments.

Mr. *Van Manen* asked whether all the sculptures mentioned in the paper had been acquired by a public museum and whether there were any still lying in private ownership.

Mr. *Saraswati* replied that some of the sculptures have been collected for the Rajshahi Museum, and there are numerous others lying uncared for in the different village *thāns*. In each ancient site there is a *thān* or two where every image found in the locality is deposited. The images are thus under so-called worship and, as such, too sanctified to be removed elsewhere. In fact there is no proper worship, no proper arrangement for their protection from the sun, rain or other natural agencies or even from the vandalism of man. The local people would not allow anyone to remove them elsewhere. It is proper that the Archaeological Department should strive to acquire them for a public museum.

The following exhibits were shown and commented upon :—

1. BAINI PRASHAD.—*The Rufous-necked Hornbill*.

In Vol. XVIII, part I, of 'Asiatick Researches' for 1829, B. H. Hodgson, the father of Vertebrate Zoology in India, described in detail the Rufous-necked Hornbill under the name *Buceros nepalensis* and published two coloured plates of this beautiful bird. Later Blyth, the well-known Curator of the Society's museum, in 1847 exhibited mounted specimens of males and females of this species. The author during a recent tour in the Barail range of Manipur obtained a specimen of a full-grown male of this species at Nungba. This specimen shows certain differences in the oblique black grooved bands extending across the basal portion of the beak. The specimens were exhibited together with some other specimens from the collections of the Zoological Survey of India. The species now known as *Aceros nepalensis* has a wide distribution in Nepal, Bengal, Assam, Manipur, Lushai Hills, mountains of Burma, Karenni up to Mount Muley it, Tenasserim, and Siam. It has also been recorded from Siam and Tonkin.

2. BAINI PRASHAD.—*Kabui Naga cloths*.

In the April meeting of the Society of last year a variety of Naga spears, daos, and clothing used by three important Naga tribes, *viz.*, the Angami, the Sema, and the Ao, casually collected during a zoological survey of the Naga Hills in 1935, were exhibited. In continuation of the same survey a party recently visited the Naga Hills and the Barail mountain range which separates the Manipur State from the district of Cachar. This latter area is mainly inhabited by the Kacha Nagas of whom Kabuis form a very important element ; some Kuki settlements are also to be found in this area. A few samples of the clothing used by the Kabui Nagas, both men and women, which were collected during this tour, were exhibited and attention was directed to the remarkable change both in colour and patterns of the cloths of the Kabuis as compared with those of the other three tribes, samples of which were previously exhibited.

Dr. *Baini Prashad* said that both the exhibits are from the Manipur State which is situated to the east of the Province of Assam and to the south of the Naga Hill district. The collections exhibited were made on the journey from Imphal, the capital of the Manipur State, to Cachar

through the Barail Range. This journey is of considerable interest, as the bridle path along this route crosses 5 considerable mountain ranges covered with forest and separated from one another by deep river valleys. 'It possesses all the attractions which are conferred by stately timber, luxuriant undergrowth of bamboos, creepers and giant ferns, bold cliffs, and rivers rushing through wild gorges.' These hills are the home of the Kacha Nagas of whom the Kabui tribe is the predominant type; a few Kuki settlements are also interspersed in this area.

Sir David Ezra said that he was personally interested in the exhibit as he had made a special study of this interesting bird.

He referred to the extraordinary instinct which made the male imprison the female in a cavity in a tree trunk during the breeding and rearing period, feeding her through an aperture in the wall of the cavity. Though the subject was a little delicate, he had also to refer to the fact that the female bird kept the cavity clean by depositing its droppings outside through the feeding hole. This was a marvellous example of the development of natural instinct. The young were never allowed to leave the nest till they were old enough to go out and protect themselves independently.

Rai Bahadur R. Chanda enquired whether the fat of *dhanesh pakhi*, sometimes found in Bengal, is said to have the medicinal properties and that it cures some puerperal diseases.

Dr. Prashad replied that it is not the fat but an oil, commonly known as the *dhanesh oil*, which is supposed to be a specific against rheumatic pains. The flesh and bones of this bird are also supposed to have similar medicinal properties.

Mr. Van Manen enquired whether a Toucan is a hornbill?

Dr. Prashad replied that the Toucans belong to the family Rhamphastidae, while the hornbills to the family Bucerotidae. The Toucans are Neotropical birds, the majority of them inhabit the northern part of South America, especially Guiana and the valley of the Amazons. Some species also occur in Mexico and Central America.

3. CHINTAHARAN CHAKRAVARTI.—A shorter version of the *Kaulāvalīnirṇaya*.

Versions of many an old and popular text, which have undergone considerable changes specially through interpolations from time to time, are quite well known in the history of Sanskrit literature. It is rather rarely that we meet with such instances in the case of mediæval and comparatively later works, especially if they are of a technical nature, not expected to be quite popular. A shorter version of the *Kaulāvalīnirṇaya*, a Tantric digest by Jñānānanda with the epithets *Giri* and *Paramahansa* as recorded in the larger version published in the Tantric Texts Series of Arthur Avalon (Sir John Woodroffe), therefore, is of some interest. This version is found with the name *Kaulāvalī* in an incomplete manuscript of the work belonging to the Asiatic Society of Bengal which begins from line 50 of chapter 2 of the larger version with occasional omissions here and there. The arrangement of the chapters and the introductory verse giving the name of the author are different in the two versions. It would appear that the version as recorded in the Society's manuscript represents the original which was revised, elaborated, and given almost a new shape at some later time.

Mr. Chintaharan Chakravarti said :—

The Kaulāvalīnirṇaya—a metrical Tantric compilation held in great reverence by the Kaula worshippers whose rites and practices are described here—has been printed twice in Calcutta. MSS. of the work however are comparatively rare. The MS. of the Asiatic Society differing from the printed editions to a very great extent was found on a close examination to contain a shorter version of the work generally covering two chapters of the printed editions in one chapter of the MS. Two more short versions of the work appear to be preserved in two MSS. noticed by Kielhorn and H. P. Shastri. The work appears to have swelled in body in course of years presumably at the hands of generations of disciples of the saintly author until it was more than doubled in the manuscripts on which the printed editions were based.

Mr. Van Manen said :—

That the example of demonstrable series of expansions of a Sanskrit text was of great interest, as the problem involved appears in all the literatures of the world. In the book of Genesis nominally written by Moses, the author's own death is described. So the description cannot be from the hand of its subject. In all Chinese literature the problem arises at every turn. In the Lünyü traditions concerning and utterances by Confucius go hand in hand. In Liehtsze much is attributed to the school of that sage and not to himself. In Oriental literature there are two types of modification of the originals, abbreviations and expansions. In Mohammedan literature the abbreviations are numerous and well known. There are even abbreviations of abbreviations. Of late the expansion of the original Bhagavadgītā has been discussed by scholars. In the Mahābhārata it is one of the major problems of textual criticism. In Ancient and Buddhist philosophy it is often difficult to say whether an elaborate work has been written by the author in commentary of his own root ślokas, or whether the ślokas have been summarized after the author wrote his previous exposition. The examples in various ancient and modern literatures were too numerous to be mentioned, but the problem itself was one of the greatest importance, and wherever a clear example could be found of either successive stages of abbreviation or successive stages of elaboration of a work under clearly provable circumstances, such an example should be studied and analyzed for whatever conclusions it might warrant.

4. JOHAN VAN MANEN.—*A recent detailed map of Abyssinia.*

The happenings in Abyssinia have created a demand for detailed geographical information concerning the country. The maps published in local newspapers are defective and insufficient for one to understand the topographical aspects of the war news. Current atlases are similarly lacking in necessary detail. Towards the end of 1935 the Touring Club Italiano in Milan published a map of Oriental Africa, containing Eritrea, Abyssinia, and Somaliland, on a scale of 1,350,000 ; 1 cm.=35 km.

The map, which does not seem to be locally available, is exhibited. It contains practically all the names mentioned in recent despatches and is admirably clear.

APRIL.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 6th, at 5-30 P.M.

PRESENT.

RAI SIR UPENDRA NATH BRAHMACHARI BAHADUR, Kt., M.A., M.D., Ph.D., F.S.M.F., F.A.S.B., Vice-President, in the Chair.

Members :

Agharkar, Dr. S. P.	Hora, Dr. S. L.
Biswas, Mr. K. P.	Hosain, Dr. M. H.
Bose, Mr. M. M.	Manen, Mr. Johan van
Brown, Mr. Percy	Mukherjee, Dr. J. N.
Chanda, Rai Bahadur R.	Mullick, Mr. M. L.
Chatterji, Dr. S. K.	Olpadvala, Mr. E.
Driver, Mr. D. C.	Rahman, Mr. S. K.
Haq, Mr. M. Mahfuz-ul	Sen Gupta, Mr. N. C.
Hobbs, Mr. H.	Sirkar, Mr. Ganapati
	Stagg, Lt.-Col. M.

Visitors :

Chanda, Mr. K. L.	Chanda, Mr. R. P.
	Scallan, Mr. F. C.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of nine presentations of books, etc., which had been placed on the table for inspection.

The General Secretary announced that the following candidates would be balloted for as Ordinary Members :—

(11) Rankin, Everett H., M.B., Assistant General Manager for India, The Standard Vacuum Oil Co., 6, Durgapore Park, Alipore, Calcutta.

Proposer : Johan van Manen.

Seconder : M. Hidayat Hosain.

(12) White, John Campbell, American Consul General, 9, Esplanade Mansions, Calcutta.

Proposer : E. M. Groth.

Seconder : Johan van Manen.

The General Secretary reported that there had been no loss of membership, since the previous meeting, by death.

The General Secretary reported the following loss of membership, since the previous meeting, by resignation :—

(5) M. A. Korní (An Ordinary Member, 1930).

(6) Rev. J. Pessein (An Ordinary Member, 1930).

(7) C. A. Cookson (An Ordinary Member, 1935).

The General Secretary reported that the election of—

(1) Sukumar Chakravarti (elected on 2-9-35),

(2) A. J. Faruqi (elected on 2-9-35)

had become null and void, under Rule 9.

The General Secretary reported that there had been no withdrawals of application, since the previous meeting.

Papers were presented and exhibits were shown and commented upon, as detailed below.

The Chairman announced the result of the ballot for the election of the Ordinary Members and declared that the candidates had been duly elected.

The Chairman announced that no meeting of the Medical Section had yet been arranged to be held during the current month.

The following paper was read :—

1. N. C. SEN GUPTA.—*Putrikāputra, or the appointed Daughter's Son in Ancient Law.*

In this paper the author gives a brief history of the evolution of the Putrikāputra in Hindu Law. He points out that the Vedic Ārya did not recognize any son except an *aurasa* one. Gradually however on account of changes in social organization, when a practice grew up of sonless persons having their daughters about them, the recognition of the appointment of a daughter came by the absorption of a custom of matriarchal or semi-matriarchal non-Āryas.

This practice gradually led to the recognition of the daughter's son as a kinsman entitled to inherit and to offer piṇḍas. When this stage was reached the usefulness of the Putrikā ceased and already by the end of the period of the Dharmasūtras, the Putrikā and her son ceased to exist and the daughter and her son as such took their place in law. In the metrical Smṛtis as well as in the commentaries the Putrikā does not appear as a live institution.

The author also discusses the legal effect of Putrikākaraṇa on her status regarding gotra and piṇḍa. The Smṛtis are silent on these points, but the commentaries have academic discussions which bring out : (1) that in regular Putrikākaraṇa the full ritual of marriage was not performed ; (2) that where a putrikā was so made she remained in her father's gotra and did not pass to her husband's gotra ; (3) and that where the full ritual including sampradāna was made, the daughter passed to her husband's gotra.

The following exhibits were shown and commented upon :—

1. RAMAPRASAD CHANDA.—*Three small Brass Images from the Chittagong District.*

These three brass images with a few other antiquities were dug out of a tank at Patakot, P.O. Zorawarganj, District Chittagong, in 1935, and collected by Mr. Sasanka Sekhar Sarkar of the Bose Institute.

(1) A seated image of Gaṇeśa, $1\frac{1}{8} \times 1\frac{1}{8}$ inches. The modelling is characterized by sensitiveness and elasticity and the figure appears to be swinging.

(2) Seated two-armed goddess with a child, $3 \times 1\frac{7}{8}$ inches. The figure of the mother is lively and her face even in this damaged state does not lack expression. The composition is perfectly balanced by the ingenious use of the motive of cow with calf to the left. Note the spear-head with two small arms on the head of the goddess. The same motive is found at the top of the halo.

(3) Sadāśiva seated cross-legged, $3\frac{3}{8} \times 3$ inches. The most remarkable feature of the image is the spear-head with a hook on either side on the crown. This reminds one of decorative heads crowned with trident on the waggon-roof of a monolithic temple of Śiva at Mahābalipuram (in the Chinglepet District of the Madras Presidency) and of the figures of deities crowned by tridents carved on some of the seals recovered from Mohenjo-daro and Harappa. One of these deities on a seal from Mohenjo-daro shows three heads and is seated cross-legged like Sadāśiva. Therefore this small image may be recognized as a link in the chain that connects historic with pre-historic India.

Sadāśiva may be assigned to the twelfth century A.D., and Gaṇeśa and the mother are perhaps earlier.

Mr. Percy Brown called attention to the fact that the images were not all of brass, one, and possibly two, were of copper. This brought up the subject of a broad division of Asiatic metal-work by means of the metal employed, for instance brass was mostly used in the central regions of India, copper towards the north-east and in Nepal and Tibet, while bronze showed influence of the Far East, and so on.

The largest of the three exhibits, which was of copper, was interesting on account of the shape of the plaque forming its background, as this was pointed at the apex; it also contained a projection and a receptacle at its back for attaching it to some larger object, such as a shrine. As regards the pointed shape of the plaque, this recalled the shape of the innumerable stone 'steles' carved with figures found on most historic sites, as they were evidently made in this form to fit into arched niches provided for their accommodation in the walls of large brick or stone monuments.

On one of the metal images forming the exhibit, the one containing the cow suckling a calf, there was an object in front of these animals, which might be a manger, recalling the manger (?) in front of the bull images of Mohenjo-daro.

2. JOHAN VAN MANEN.—*A Pre-historic Iron Implement from Malacca.*

Dr. P. V. van Stein Callenfels, the Dutch archæologist, who sent this implement wrote as follows :—

From time to time a peculiar iron implement is found in the peninsula of Malacca, concerning which no one knows the use or manner of application. The Malays call it *Tulang mawas* which means 'bone of orang utan'. They say that in olden

times there lived large apes with iron bones and an iron spur at the elbow, and that this is what constitutes the implement.

In connection with the find spots I have always supposed that it may have been an old type of miner's instrument used by early tin miners. It is not, however, clear to me how that should have been.

A short time ago, whilst investigating a few so-called 'slab graves', graves built up out of stone slabs, which are an offshoot of the megalithic culture occurring in the Malay peninsula, in Southern Sumatra and in Java, we found an appreciable collection of such instruments which make it clear that they are connected with the slab grave builders, and have been probably introduced by them.

These slab graves are found along the rivers running into the Strait of Malacca and are therefore evidently relics of immigrants who moved inland along these rivers; perhaps searching for tin. In my opinion the mining hypothesis is therefore not without foundation. I believe to discern a certain Indian influence exercised at the end of the pleistocene, upon this part of Further Asia, but after this all Indian influence ceases and everything is here derived from south-west China, *via* Siam.

These slab graves, which I feel inclined to date about the beginning of the Christian era, bring us for the first time again Indian influence which soon expands widely and leads to Hinduisation of Sumatra, Bali, Indo-China, and so on.

If this be the case, the iron instrument must have an Indian origin and there may be a possibility that India may bring a solution of the questions as to for what purpose and how it was used.

I am sending a specimen from the Raffles Museum, which was found on the Sungei Plus, the Plus river, in Perak. Would it be possible to obtain any information regarding the instrument? Are any similar instruments known from olden times, or even perhaps still in use somewhere? In the latter case, it would be important for us to obtain a similar modern instrument, complete with handle.

The implement was exhibited and a request for consideration and discussion was made.

3. M. HIDAYAT HOSAIN.—*Kharīdat al-Qaṣr*.

On account of the lateness of the hour this exhibit was postponed to the next meeting.



MAY.

An Ordinary Monthly Meeting of the Asiatic Society of Bengal was held on Monday, the 4th, at 5-30 P.M.

PRESENT.

PERCY BROWN, ESQ., A.R.C.A., F.A.S.B., Member of Council, in the Chair.

Members :

Bogdanov, Mr. L.	Ghuznavi, Sir A. H.
Bose, Mr. M. M.	Groth, Mr. E. M.
Chakravarti, Mr. C.	Haq, Mr. M. M.
Chatterji, Dr. S. K.	Hosain, Dr. M. H.
Driver, Mr. D. C.	Manen, Mr. Johan van
Flury, Mr. E. C.	Mullick, Mr. M. L.
	Mr. Rahman, S. K.

Visitor :

Bose, Mr. L. M.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of eleven presentations of books, etc., which had been placed on the table for inspection.

The General Secretary announced that the following candidates would be balloted for as Ordinary Members :—

(13) *Husain, Syed Asaf*, M.A., LL.B., Lawyer, 3, Old Court Road, Lucknow.

Proposer : M. Hidayat Hosain.

Seconder : M. Mahfuz-ul Haq.

(14) *Sarawgi, Chandmall*, Member, Gauhati Municipal Board, Partner in the firm of Saligram Chunilal Bahadur & Co., Gauhati, Assam.

Proposer : M. Hidayat Hosain.

Seconder : S. L. Hora.

The General Secretary reported that an application for Institutional Membership had been received from :—

(10) The Principal, Patna College, Patna,
which had been accepted by the Council.

The General Secretary reported the following loss of membership, since the previous meeting, by death :—

(2) Dr. C. J. H. Nicolle (An Honorary Fellow, 1929).

The General Secretary reported the following loss of membership, since the previous meeting, by resignation :—

(8) N. E. Parry (An Ordinary Member, 1929).

(9) N. L. Kapoor (An Ordinary Member, 1935).

The General Secretary reported that there had been no lapses of election, since the previous meeting, under Rule 9.

The General Secretary reported that the following had withdrawn his application for membership :—

(2) P. Seetharamiah (Elected on 3-2-36).

Papers were presented and exhibits were shown and commented upon, as detailed below.

The Chairman announced the result of the ballot for the election of the Ordinary Members and declared that the candidates had been duly elected.

The Chairman announced that no meeting of the Medical Section had been arranged to be held during the current month.

The following paper was read :—

1. M. HIDAYAT HOSAIN.—*Islamic Apocrypha (Tadlis)*.

All literary activities of the whole Islāmic world are rooted in the Qur'ān and the *Hadīth*. The Qur'ān is being preserved by innumerable adherents of Islām by committing it to memory and as such, there is no possibility of any addition to, omission from, or alteration of a single word in the text of the Qur'ān; but the *Hadīth* covers a vast literature and the early Islāmic scholars devised means and rules to establish its authenticity.

Tadlis is the subject matter of this paper and it removes the *Hadīth* from the category of *Hadīth Ṣaḥīḥ* (sound *Hadīth*) to that of the unauthenticated *Hadīth*.

According to the Arabic lexicon, *Tadlis* means 'to sell an article concealing its defects'; and according to the traditionists it means 'to conceal the defects of the *Hadīth* either in the text, in the chain of narrators, or in the source', i.e. the teacher from whom it is learnt.

Tadlis is divided into three kinds—(a) *Tadlis* in the chain of narrators, (b) *Tadlis* in the text, and (c) *Tadlis* in the teacher, from whom the tradition is learnt.

The author has dealt in detail with the three kinds of *Tadlis* and their subdivisions. He has also mentioned the names of the authors who have contributed to the *Tadlis* literature.

Mr. Percy Brown enquired what relation the *Aḥādīth* bore to the *Sunna*.

Dr. Hosain replied that the word *Hadīth* meant primarily a communication or narration in general whether religious or profane, then it had the particular meaning of a record of actions or sayings of the Prophet and his Companions. In the latter sense the whole body of the sacred Tradition of the Muhammadan was called the *Hadīth*.

Sunna was properly the way one was accustomed to go, i.e. use and wont, ancient tradition. But in Islām *Sunna* could no longer consist in following the customs and usages of heathen ancestors. The Moslem community had to hold up a new *Sunna*. Each believer had to take the conduct of the Prophet and his Companions as a model for himself in all affairs of life.

The Prophet's *Sunna* in the sense of his words, action and silent approval was fixed orally and in writing in the *Ḥadīth*. In theory the conception of *Sunna* and *Ḥadīth* was separate but in practice they often coincided, which might be due to the fact that some of the Collections of *Ḥadīth* had the title *Sunna* (e.g. the Collections of Abū Dā'ūd, Ibn Māja, and an-Nasā'ī).

Mr. M. M. Bose enquired of the sure test of the authenticity of a *Ḥadīth* and also of the reliability of a narrator.

Dr. Hosain replied that according to Muslim view, a *Ḥadīth* could only be considered credible when its *isnād* (chain of narrators) formed an unbroken series of reliable narrators. They endeavoured not only to ascertain the names and circumstances of the narrators (*rijāl*) in order to investigate when and where they lived, and which of them had been personally acquainted with the other but also to test their reliability, truthfulness and accuracy in transmitting the texts. The criticism of the narrators was called *al-Jarḥ wa't Ta'dīl*. The 'knowledge of the men' (*ma'rifat ar-Rijāl*) was considered indispensable for every student of *Ḥadīth*. All the commentaries on the Collections of *Ḥadīth* therefore contain more or less copious details concerning the narrators. Special works were also written on this subject.

The following exhibits were shown and commented upon :—

1. M. Hidayat Hosain.—*Kharīdat al-Qaṣr*.

This book is an anthology of contemporary poets by 'Imād ad-Dīn al-Kātib al-Iṣfahānī (died A.D. 1201). It is a continuation of al-Kḥazraji's (died A.D. 1172) work *Zīnat ad-Dahr*. The latter is a continuation of 'Alī al-Bākhrazī's (died A.D. 1075) *Dumyat al-Qaṣr* which is also a continuation of Ath-Tha'labī's (died A.D. 1037) *Yatīmat ad-Dahr*. Ath-Tha'labī wrote this work to serve as a supplement to Hārūn al-Munajjim's (died A.D. 900) work *al-Kitāb al-Bārī*.

The *Kharīdat al-Qaṣr* is the chief work of 'Imād ad-Dīn and occupies a very important place in Arabic literature. It includes, with the exception of a few obscure poets, the names of all the poets of 'Irāq, Syria, Mesopotamia, Egypt, North Africa, Spain, and Sicily. These poets flourished between the years A.D. 1106–1176. According to Ibn Kḥallikān, this work is in ten volumes, and has never been printed. Though copies of this MS. are found in European Libraries, they are only in fragments.

The Society's copy of this MS. is most important as it is the original draft of the author. It begins with the mention of the names of the poets who lived during the author's life-time at Aleppo. The first name mentioned is that of Ḥammād al-Kḥarrāt. 'Imād writes about him that he was the foremost poet in Syria. Then he enumerates the names of the poets who lived in Hījāz, Moṣil and Yaman.

Dr. Hosain said that this work was composed by 'Imād ad-Dīn Muḥammad bin Muḥammad al-Kātib al-Iṣfahānī. He was born at Iṣfahān on Monday, the 2nd of Jumāda II, or according to some in Sha'bān, A.H. 519 (July, A.D. 1125). After having acquired whatever instructions

his native place could afford, he went to Baghdād while he was very young and got himself admitted into the Nizāmiya College.¹

He first studied jurisprudence under Abū Maṣṣūr Sa'īd bin Muḥammad bin ar-Razzāz, a professor of the Nizāmiya College (died A.H. 539, A.D. 1145) and then took up the subject of Polemic Divinity and various branches of Literature (*al-Khilāf wa funūn al-Adab*) in which he acquired proficiency. He studied Ḥadīth in the same city under 'Alī bin Hibatallāh bin 'Abd as-Salām, Muḥammad bin 'Abd al-Malik bin Jirūn and other masters.

After having become proficient in various branches of learning, he gained the patronage of 'Awn ad-Dīn Yahya bin Hubaira, the Minister of al-Muqtafi (A.H. 530-555, A.D. 1136-1160) in Baghdād and was appointed Government Inspector in the Province of Basra. Subsequently he was transferred in the same capacity to Wāsit. On the death of 'Awn ad-Dīn in A.H. 560, A.D. 1165, 'Imād ad-Dīn was dismissed from his post and had to pass a difficult time. In the month of Sha'bān, A.H. 562 (May-June, A.D. 1166) 'Imād ad-Dīn went to Damascus and found a friendly welcome there, and through the recommendation of Kamāl ad-Dīn Abū'l Faḍl Muḥammad bin ash-Shaharzurī was appointed to conduct the State correspondence. He fulfilled the duties of this high post with great success and became a trusted servant of the State. He was sent by Sultān Nūr ad-Dīn on a diplomatic mission to Caliph al-Mustanjid (A.H. 555-566, A.D. 1160-1170) at Baghdād. On his return he was appointed in A.H. 567, A.D. 1171, to a professorship of a College which was called after his name *al-Imādiya*. In A.H. 568, A.D. 1172, Sultān Nūr ad-Dīn conferred on him the Presidentship of the Council of State (*Ishrāf ad-Diwan*). On Nūr ad-Dīn's death in A.H. 569, A.D. 1173, his enemies succeeded in harming him and he was compelled to leave for Baghdād. On arriving at Moṣil he fell ill, but on his recovery he left the place on the 4th of Jumāda I, A.H. 570 (December, A.D. 1174) and went to Sultān Ṣalāh ad-Dīn who was preparing to conquer Syria. He paid his respect to the Prince at Ḥamṣ (Emessa) and recited to him a poem in congratulation of his capture of this city. He acquired great influence with the Sultān and accompanied him wherever he went. On the death of Sultān Ṣalāh ad-Dīn in A.H. 589, A.D. 1193, he retired into private life and devoted himself to literary work. He died at Damascus on Monday, the 1st of Ramaḍān, A.H. 597 (June, A.D. 1201).

The *Kharīdat al-Qasr wa Jarīdat al-'Asr* (or Virgin Pearl of the Palace and the palm-branch of the age) is an anthology of contemporary poets. He wrote this book as a continuation of Abū'l Ma'ālī Sa'd bin 'Alī al-Anṣārī al-Khazraji's (d. A.H. 568, A.D. 1172) work *Zīnat ad-Dahr wa 'Uṣrat ahl al-'Asr wa Dhikr Altāf Shi'r al-'Asr* (ornament of time, refuge of contemporaries, and citations of the beauties contained in modern poetry) which work was meant as a continuation to Abū'l Ḥasan 'Alī bin al-Ḥasan al-Bākhrazī's (d. A.H. 467, A.D. 1075)² *Dumyat al-Qasr wa 'Uṣrat ahl al-'Asr* (statue of the palace and the essence extracted from our contemporaries) which was written as a continuation to ath-Tha'labī's (d.

¹ The foundation stone of this greatest seat of learning in Islām was laid in Dhū'l Hijja, A.H. 457 (November, A.D. 1065) and it was publicly opened on Saturday, the 10th Dhū'l Qa'ada, A.H. 459 (September, A.D. 1067) in Baghdād. It was named the Nizāmiya College after the name of the great minister of Alp Arsalān and Malik Shāh, Nizām al-Mulk. Another college under the same name was also established by him at Nisāpūr. See Ibn Khallikān, Egyptian edition, vol. I, p. 304, and also Wüstenfeld, *Die Académien der Araber und ihre Lehrer*.

² A supplement to this work was written by Abū'l Ḥasan 'Alī bin Zaid al-Baihaqī under the title of *W'shāh ad-Dumya* (girdle of the statue). Imād ad-Dīn in his *Kharīda* names him Sharaf ad-Dīn Abū'l Ḥasan 'Alī bin al-Ḥasan al-Baihaqī. See De Slane, vol. II, p. 323.

A.H. 429, A.D. 1037) *Yatīmat*¹ *ad-Dahr fī Maḥāsin ahl al-ʿAṣr* (the pearl of the age, treating of the merits of contemporaries). Ath-Thaʿlabī wrote this work to serve as a continuation to Hārūn bin ʿAlī al-Munajjim's (d. A.H. 288, A.D. 900) work *al-Kitāb al-Bārī fī Akhbār ash-Shuʿarāʾ al-Muwalladīn* (the elegant book about the accounts of post-classical poets).² This anthology, the *Khariḍat al-Qaṣr*, is the chief work of ʿImād ad-Dīn and constitutes a very important work of Arabic literature. It includes, with the exception of a few obscure authors, all the poets of ʿIrāq, Syria, Mesopotamia, Egypt, North Africa, Spain, and Sicily. According to Ibn Khallikān this work is in ten volumes. It has never been printed. Though copies of it are found in many Libraries in Europe (Berlin 7409, Vienna 366-8, Gotha 2128, Paris 3313, British Museum 573) yet everywhere only a portion of it exists. Our copy is also a portion of that voluminous work—begins with the poets of Ḥalab (Aleppo). The first name mentioned is of Ḥammād al-Kharraṭ. ʿImād writes about him that he is unequal in poetry throughout Syria. Then he gives the poets of Ḥijāz, Moṣil, and Yaman. Our copy is the most important one as it is the original draft of the author. The book contains accounts of the poets who flourished between the year 500 (A.D. 1106) and 572 (A.D. 1176). Subsequently ʿImād ad-Dīn wrote a supplement to *al-Kharida* and named it *Sail ala dh Dhail* (torrent after the rain, or after the rain) see Ibn Khallikān, vol. II, p. 75.

His other works are :—

(1) *al-Faṭh al-Qussī fī l-Faṭh al-Qudsī* (the Qussian³ elucidation on the conquest of Jerusalem). It gives a story of the conquest of Syria and Palestine by Ṣalāḥ ad-Dīn and of how Jerusalem was taken from the *Crusaders*. It has been edited in two volumes by Landberg, Leiden, 1888.

(2) *Nuṣrat al-Fatra wa ʿUṣrat al-Fitra*, (succour against languor and asylum for the human race) is a history of the Saljūqs in al-ʿIrāq on the basis of the official records. A synopsis by al-Bundārī (d. A.H. 623, A.D. 1226) under the title *Zubdat an-Nuṣra wa Nuḵbat al-ʿUṣra* (cream of the Nuṣra and extract of the ʿUṣra) has been published by Houtsma, Leiden, 1889.

(3) *Kitāb al-Barq ash-Shāmī* (the Syrian lightning) is in seven volumes and is devoted to historical subjects. Only the 5th volume dealing with the accounts of A.H. 578-80, A.D. 1182-84, is in Bodl. See vol. I, No. 761. He commences with the history of his own life and gives an account of his journey from ʿIrāq to Syria, and of what happened to him when he was in the service of Sulṭān Nūr ad-Dīn Maḥmūd. He then relates how he obtained admission to the service of the Sulṭān Ṣalāḥ

¹ *Yatīma* signifies both *orphan* and *precious pearl*. Abū l-Futūḥ Naṣrallāh bin Qalakis (d. A.H. 567, A.D. 1171, Ibn Kh., II, p. 156) has written a verse in praise of this book which may be translated as follows :—

The verses of the poems in the *Yatīma* are virgin daughters of the spirits who lived in olden days. They are now dead, but their daughters have survived and the work bears the name of *Yatīma*.

² *Muwallad* means properly one born of non-Arab parents but brought up among Arabs. The post-classical poets were called *Muwalladūn* in contrast to the *Islamiyūn*, their language was no longer considered a model of grammar, lexicography, and prosody. The dividing line between the two lies about the end of the first century, Hijra.

³ Quss bin Saʿīda bin ʿAmr al-ʿIbādī (the nestorian Christian) was bishop of Najrān in Yaman and celebrated for his eloquence. The Prophet met him at ʿUkāz (the celebrated fair formerly held near Mecca which lasted three weeks) and heard him preach, sometime previously to the promulgation of Islām. al-Masʿūdī speaks of him in Murūj adh-Dhahab. See Sprenger's translation, vol. I, p. 137.

ad-Dīn, and notices some of the conquests achieved in Syria. He has entitled this work *al-Barq āsh-Shāmī* (the Syrian Lightning), because the hours he spent in those days resembled the lightning¹ flash in the pleasure which they gave and the rapidity with which they passed away.

(4) *as-Sirr al-Maktūm* (the hidden secret) treats of judicial astrology. See Ibn Khallikān, vol. II, p. 75.

(5) He has also left a collection of epistles and another of poems in four volumes. See Ibn Khallikān, vol. II, p. 75.

It is related that 'Imād met al-Qāḍī Fāḍil one day on horseback and said to the Qāḍī 'Proceed, and may the horse never stumble with thee' (Sir *fala kaba bik al-Faras*), and the Qāḍī replied, 'May the glory of 'Imād endure' (Dām 'ala al-'Imād). These phrases may be read either backwards or forwards without any change.² Imād-ad-Dīn's prose writings are characterized by an exceedingly ornate and bombastic style.

Prof. S. K. Rahman enquired when this MS. was obtained for the Society.

Dr. Hosain replied that it was acquired some time ago from an Arab book-seller.

2. SUNITI KUMAR CHATTERJI.—*An old Hindu painting on cloth from the Island of Bali.*

This painting was bought by me at Kloengkoeng in South Bali, in 1927, when I visited the island with Rabindranath Tagore. It is on coarse cloth, probably of European origin, and measures 4 feet 11 inches by 4 feet 4 inches, and is a characteristic specimen of Indonesian art of Hindu inspiration. The entire piece is divided into 42 compartments, 7 each in 6 rows, each compartment measuring 9 inches by 7 inches, and in each a scene is depicted. In addition there is a row of smaller compartments at the bottom, and also 7 in number, depicting mythological animals. There are ornamental scrolls at the top and on the two sides, without any such scroll at the bottom. There are legends in Balinese characters in each compartment, but I have not been able to get these read. The scroll is said to be astrological in intent.

In the topmost row we have figures of divinities with attendants. The yellow background round each figure, like a flame of fire, is the *prabhā* or halo round the god or goddess.

The 35 compartments, apart from those in the top row and the smaller set at the bottom, depict among other things scenes which are supposed to show the result of astrological influences on life. We get little *genre* sketches of Balinese life in these. Among other subjects, we have a combat between warriors, between a god and a dragon (*nāga*); a ritual suicide; ghost scenes; superstitions connected with twin babies; agricultural and pastoral life as well as fishing; and intimate erotic scenes. They form good illustrations of old Balinese life and belief drawn

¹ We find in the poems of the ancient Arabs, the lover frequently describes his joy in watching the lightning, which presages a fertilizing shower to the plains where his mistress dwells.

² The vowels written in italics are not represented in Arabic writing

and painted by the Balinese themselves in their traditional manner, and as such they have a great value as documents of culture. These scenes would be well worth reproducing if explanations with translation of the Balinese legends were forthcoming.

To show the contrast with the rather decadent modern scroll paintings (in vogue for the tourist trade), done in a similar style, I place beside this genuine old one (I should say about 50 years old ?) a fragment of a recent work depicting *Apsarases*, or nymphs, bathing, also bought at Kloengkoeng.

Mr. Percy Brown said that he only felt competent to judge this painting in its artistic aspect, and he thought it showed evidences of considerable dexterity in handling particularly in the sureness of the outline and the freedom of the drawing generally, all of which undecided the such workmanship with the result of a long apprenticeship in the art of painting on cloth. He would be interested in hearing Dr. Chatterji's authority for the age of the exhibit.

In reply Dr. Chatterji said that the age of the painting (about 50 years) as suggested by him was just a surmise. Paintings in this style are not so very old in Bali, and buildings with wall paintings in the same style have been erected in Bali a couple of generations ago. The well-known *Kerta-gus* pavilion at Kloengkoeng, which is used as a law-court and is one of the show places in that little town, has wall-paintings recalling those in the scroll exhibited, and, as far as he remembered, this pavilion was built in the nineties of the last century. He saw similar paintings on the walls of houses within the *enceinte* of the old residence of the stedehouder at Karang-Asem in East Bali. The same style although a little decadent now is still in vogue as the native school of painting in the island. Drawings in the same manner scratched with an iron stylus on palm leaves, forming illustrations to *lontar* or palm leaf books, are known: these recall the Orissan drawings on palm leaf, similarly scratched with an iron stylus. The Royal Batavian Institute of Arts and Sciences has published in facsimile a set of palm leaves with scratched illustrations forming a book called 'Darmo Lelangen'; and Balinese scribes are found even at the present day who can make these pictures on palm leaf. The *Kirtya Liefrinck-Van der Tuuk* at Singaradja, Bali, which is a sort of Asiatic Society and Literary Academy for Bali, is making a collection of palm-leaf MSS. in Balinese, Javanese and Kawi, and in Sanskrit, and occasionally when old MSS. are not obtainable for its collection, the *Kirtya* is getting copies made, text and illustrations and all. So that the style still continuing to be a living one, the present scroll exhibited which is executed in a fine manner could very well be assumed—and its look also supports this view—to be about 50 years old. This view is put forward as a suggestion only.

Mr. Van Manen said :—

'The gods are particularly propitious to-day. After hanging for exhibition Prof. Chatterji's Balinese scroll, I received the European mail for the week this very afternoon, and one of the first things that I laid my hands upon was the latest number of the *Baessler-Archiv* (Vol. XVIII, Heft 4) to which I feel happy to draw the attention of Prof. Chatterji and of the meeting. This number of the *Archiv* has an article by Dr. Alfred Maass on the Balinese Calendar, including a similar Balinese scroll which Dr. Maass obtained as a present from a Dutch friend (who procured it from Klungkung in Bali—the same place from where Prof. Chatterji's scroll comes) a few years ago. Dr. Maass has been working at the Balinese Calendar and allied topics for a good number of years, and this coloured scroll, which is almost a counterpart of Prof. Chatterji's, and of which a

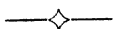
coloured reproduction has been published by Dr. Maass in the *Baessler-Archiv*, has been successfully interpreted by him. The Balinese Calendar shows a combination of the Hindu system of a seven-day week and the native Malayo-Polynesian system of a five-day week. Hence we have, apart from the top row depicting the gods and the bottom row depicting the mythological animals, $7 \times 5 = 35$ compartments. These 35, with the 7 compartments for the gods at the top, and the 7 for the mythological animals at the bottom which symbolize the character of men and women born under the influence of the stars, form 49 compartments in all. Dr. Maass has given the reading of the Balinese inscriptions, with translations and a detailed discussion, and the whole thing has thus been made accessible to science. Prof. Chatterji's scroll is equally genuine with Dr. Maass's, but it is slightly different in some of the scenes depicted: particularly in the erotic scenes, which are substituted by other ones in Dr. Maass's scroll. And now that Dr. Maass's illuminating article is available, we may expect Prof. Chatterji to study this highly interesting and valuable document of Indonesian culture which he has exhibited to-day, and in course of time to publish his observations.'

After the showing of the exhibits the following communication was made:—

1. JOHAN VAN MANEN.—*The recent descriptions of Minya Gongkar.*

The existence of a high peak about 30 miles south of Ta-chien-lu in Sze-chuan (Western China) was reported in 1879 by Count Bela Szechenyi. The mountain was almost forgotten till in 1930 Joseph Rock published some magnificent coloured photographs of it in the American National Geographic Magazine. The Roosevelts, in 1929 however, had again alluded to the mountain estimating its height at a (doubtful) 30,000 feet. Dr. Arnold Heim explored the mountain in detail (not climbing it) in 1930-31 and gave excellent descriptions, maps and pictures, in his work *Minya Gongkar* (1933). He estimated the height at 7,700 metres (25,262 feet). J. H. Edgar contributed valuable data on the subject between 1926 and 1930. In 1932 three Americans R. L. Burdsall, Arthur B. Emmons, and Terris Moore actually climbed the mountain, reaching its summit. They took careful measurements and calculated the height to be 7,590 metres, or 24,900 feet. An attempt is made to summarize the problems involved.

Mr. Percy Brown remarked that it was clear this mountain was in the vicinity of the country occupied by that class of Tibetans known as the Kam, or Kamba, with whom he had some acquaintances. These were a particularly picturesque people, mediæval in their appearance and costume, roughed and rugged in their manner as the mountain near which they lived. The Kams were the producers of much of the artistic ironwork of Tibet, such as arms and perforated bowls, the iron in which they were worked being probably obtained from the mountainous tract now described.



JUNE.

An Ordinary Monthly Meeting of the Royal Asiatic Society of Bengal was held on Monday, the 1st, at 5-30 p.m.

PRESENT.

RAI SIR UPENDRA NATH BRAHMACHARI BAHADUR, Kt. M.A., M.D., Ph.D., F.S.M.F., F.R.A.S.B., F.N.I., Vice-President, in the Chair.

Members :

Bogdanov, Mr. L.	Driver, Mr. D. C.
Bose, Mr. M. M.	Ghose, Mr. T. P.
Brown, Mr. Percy	Guha, Dr. B. S.
Chakravarti, Prof. C.	Haq, Mr. M. M.
Chatterjee, Mr. P. P.	Hobbs, Mr. H.
Chatterji, Prof. B. R.	Hosain, Dr. M. H.
	Mullick, Mr. M. L.

Visitors :

Biswas, Mr. K. P.	Bose, Mr. A.
	Sen Gupta, Prof. P. C.

Before opening the proceedings, the Chairman announced that His Majesty, the King Emperor, had been graciously pleased to grant permission to the Society to use the title 'Royal' before its name, and that the Society therefore would henceforth be known as the 'Royal Asiatic Society of Bengal'.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of eleven presentations of books, etc., which had been placed on the table for inspection.

The General Secretary announced that the following candidates would be balloted for as Ordinary Members :—

(15) *Sen, Jitendra Mohan*, M.Ed., B.Sc., F.R.G.S., F.N.I., Assistant Director of Public Instruction, Bengal; 63, Lansdowne Road, Calcutta.

Proposer: Sir Upendra Nath Brahmachari.
 Seconder: J. N. Mukherjee.

(16) *Ahmad, Alfazuddin*, Khan Bahadur, M.A., Retired Assistant Director of Public Instruction, Bengal; Dhalhora, P.O. Tamluk, Midnapur.

Proposer: Sir Upendra Nath Brahmachari.
 Seconder: M. Mahfuz-ul Haq.

The General Secretary reported the following loss of membership, since the previous meeting, by death :—

(3) Sir R. N. Mookerjee (A life Member, 1898, Honorary Fellow, 1929).

Sir Upendra Nath Brahmachari read an obituary notice of Sir R. N. Mookerjee (see page 183).

The General Secretary reported that there had been no loss of membership, since the previous meeting, by resignation.

The General Secretary reported that there had been no lapses of election, since the previous meeting, under Rule 9.

The General Secretary reported that there had been no withdrawals of application, since the previous meeting.

Papers were presented and exhibits were shown and commented upon as detailed below.

The Chairman announced the result of the ballot for the election of Ordinary Members and declared that the candidates had been duly elected.

The Chairman announced that no meeting of the Medical Section had yet been arranged to be held during the current month.

The following paper was read :—

1. P. C. SENGUPTA.—*The Date of the Bhārata Battle.*

The aim of this paper is to ascertain the date of the Bhārata Battle from the astronomical references in the *Mahābhārata* itself. The author first gives an outline history of some of the notable researches for finding this date in the past, and shows that their results have been all inconclusive. He then states the three traditions for the date of the event, viz. 3102 B.C., 2449 B.C. and 1421 B.C. ascribable respectively to Āryabhaṭa I (499 A.D.), Vṛddha Garga (much earlier than Āryabhaṭa I) and the astronomical writer of the Purāṇas. The author mentions the names of some notable supporters of these three traditions. He then points out how important it is to find accurately the date of the Bhārata Battle for fixing the chronology of the *Vedas*, *Brāhmaṇas* and the *Upaniṣads*.

The author next cites a system of consistent astronomical references from the *Mahābhārata* from which he attempts an approximate solution of the problem as one on conjunction of the moon with the sun and some fixed stars. He finds that the approximate position of the summer solstitial colure of the year of the Bhārata Battle passed through the star *Regulus*, whence the year comes out to be 2350 B.C.—a result which fairly agrees with the tradition ascribed to Vṛddha Garga that Yudhiṣṭhira became King in 2449 B.C. He then examines the year 2449 B.C. astronomically by a consideration of the mean motions of the sun and the moon and proves that the lunisolar phenomena of the *Mahābhārata* references did actually happen in 2449 B.C. He next calculates the apparent longitudes of the sun, the moon, and some stars for some days of the year 2449 B.C. and shows conclusively that the fight began on the 14th October and lasted till the 31st of the same month and that Bhīṣma expired on the 20th December, one day after the sun had reached the winter solstice. So far as our knowledge goes these *Mahābhārata* references have not been used in any

other previous researches. The author has supplemented his paper by citing some other *Mahābhārata* references showing that there was a time in the history of Hindu India, when the summer solstitial colure passed through the star *Regulus* and the vernal equinoctial year through the star group *Pleiades*, for which the mean date is 2350 B.C.

In thanking the author for his most interesting paper, Mr. Percy Brown remarked that any information that would throw a light on such an important historical event was doubly welcome. He thought that Mr. Sengupta's approach to the subject opened up a new view, and he congratulated him on the originality of his research.

Mr. Hobbs supported Mr. Percy Brown and considered that Mr. Sengupta's method of approaching the subject would be found useful in fixing dates for historical events in many parts of the world. Further, he complimented Mr. Sengupta on the facility and clarity of his writing on the black board, as he had never seen anything approaching that in all his life.

The following exhibits were shown and commented upon :—

1. CHINTAHARAN CHAKRAVARTI.—*Newly acquired Manuscripts on the Cult of Kubjikā.*

Kubjikā, the name of an aspect of the Divine Mother, worshipped in Nepal, is not generally known to the world of scholars. The literature dealing with the details of her worship deposited in the Durbar Library of Nepal was brought to the notice of scholars by the late Mahāmahopādhyāya Haraprasad Shastri in 1905. MSS. of this literature are not reported from anywhere else. Of late the Royal Asiatic Society of Bengal has been fortunate in acquiring a number of MSS. which have tended to make its collection of the Kubjikā literature a fair and a representative one. A brief account was given of these MSS., a study of which is expected to throw light on a little-known but interesting cult. At least one of these MSS., viz. the *Mahākramārcana* of Ajitānandanātha, disciple of Anantānandanātha, appears to be unique.

Mr. Chintaharan Chakravarti said :—

During the last few months about a hundred MSS. of Sanskrit works which include a number of highly important and interesting MSS. have been purchased for the Society. Of these the MS. of a portion of the *Mahābhārata* in old Bengali script was exhibited by Mr. Van Manen in a previous monthly meeting. I propose to place before this meeting several valuable and unique MSS. of works on the little-known cult of Kubjikā.

The Society had already in its collections the following MSS. of works on this cult :—

1. Two MSS. of the Kubjikāmata, of which one in a dilapidated condition is in later Gupta (JASB. Pr. 1900, p. 76-7) and the other is in Newari script. The former of these MSS. which appears to be incomplete has 42 chapters while the latter preserves a version complete in 25 chapters.

2. A MS. of the *S'rimatasāraṭippaṇa* in the Nāgarī script which may be of the nature of a short commentary on the *Matasāra* described in *A Catalogue of Palm-leaf and selected Paper MSS. belonging to the Durbar Library of Nepal* (Vol. I, p. 222).

3. A MS. of the *Manthānabhairava* in Bengali characters which does not seem to agree with the MSS. of the work in the Durbar Library of Nepal (*op. cit.*, pp. 22, 224).

The MSS. lately acquired on the subject are:—

1. A MS. of the *Kubjikāmata* in Nāgarī script apparently written by a Newari hand, with a portion in the Gujarātī script. The version of the work preserved in the MS. is complete in 50 chapters. It refers to an original and earlier text of the cult (मूलग्रन्थे त्वया देव गूढमार्गेण चोद्धतः—Fol. 113A, एतत् संचेपतः ख्यातं विस्तरश्च पुरागमे—Fol. 137B), as also to works belonging to different branches of Sanskrit literature from which quotations are sometimes found to have been made (एते व्याख्याता समपूर्वं लोकाभ्यां ज्योतिषे—Fol. 114B, *Ladhvītantra*—Fol. 147B, *Aghorīdāmaratantra*—Fol. 149A).

2. Several MSS. of ritualistic works. Of these there are MSS. in Newari characters of two works of the nature of digests of original and authentic works on the cult. Of the two, one, the *Nityāhnikatīlaka* of Mukṭaka. (read as Muñjaka by H. P. Shastri in his description of the MS. of the work in the Durbar Library (*op. cit.*, p. 112), which appears to be one of the earliest of Tantra digests, refers to Śrīmuni, Ratnadeva Kāśīrāja, and *Sambhūnirṇaya*. The other the *Mahākramārcana* of Ajitānandanātha, disciple of Anantānandadeva, no manuscript of which is known to exist elsewhere, has a fragmentary MS. containing chapters III–VIII and portions of chapters 1, 2, 9 and 14. These works describe the details of the worship of Kubjikā beginning with the morning rites to be performed by the worshipper. There are also MSS. of two priests' manuals without any names. They are written in the Newari script on long sheets of paper with a large number of folds.

The rituals of the worship of the deity as detailed in these MSS., though not always clear are found to have a number of peculiar features scarcely noticed in the usual Tantra rites. The cult which is called *Śrīmata*, *Kulākula*, *Kubjikāmata* or *Kubjimata* belongs to the Western School and is stated to be the principal resort of those that follow the Kaula form of worship (देवलोके त्वयाख्यातं कुञ्जिकाख्यं महामतम् । कुलमार्ग-प्रपन्नानां मुख्यभूतं कुलागमम् ॥—Fol. 9A of the newly acquired *Kubjikāmata*). It recognizes five *cakras* and four *āmnāyas*. The form of worship followed in it is known as *Kramapūjā*. The ritualistic peculiarities consist among other things of the worship to be offered to several groups of sages and deities known as *ratna-pañcaka*, *vimalapañcaka* and *siddhacatuska*.

It should be pointed out in this connection that the *Kubjikātantra*, MSS. of which are in the Society's Library as elsewhere, has nothing to do with this cult. An account of the deity and her worship is, however, found in the *Agnipurāṇa* (Chapter 143ff). But no reference to the deity is met with in any of the well-known Sanskrit lexicons—Indian or European. As a matter of fact, however, it appears from the various scripts of the MSS. noticed above, that the literature—if not the cult itself—was not confined within the four walls of Nepal.

2. M. HIDAYAT HOSAIN.—A Persian stencilled wall-hanging Picture said to represent 'Umar *Khayyām*.

A beautiful picture done on cloth, size 17"×17", with a quatrain from the writings of 'Umar *Khayyām* (died A.H. 526, A.D. 1131).

Dr. M. Hidayat Hosain said :—

In the picture the poet is seen drinking wine on bended knees, and receiving it from his mistress who is standing. She is pouring wine from the goblet into the poet's palms. The dresses are painted in blue and red.

In the background is a natural scenery consisting of a tree and a bush with flowers on it. The clouds and the lawn in the picture have a natural setting. The whole picture is enclosed in a border of floral designs, marked with deep double border lines. The picture bears a quatrain on the right-hand top of the cloth as follows :—

- (i) خیام¹ زمانه از کسی دارد ننگ کو در غم ایام نشیند دل تنگ
(ii) می خور تو در آگینه² با ناله چنگ زان پیش که آگینه آید بر سنگ

Translation : 'O Khayyām : Time is ashamed of a person,
Who sits dejected on account of the vicissitudes of Time,
Drink wine from the glass to the accompaniment of the
music of the harp,
Before the glass is placed on the tombstone.'

Western scholars have translated the last line as, 'Ere the jug is broken on some stone'. But in my opinion the poet wants to convey a deeper meaning than this. From his usage of the word آگینه in two places of the last couplet, the word apparently has two meanings. In the first place, it means a 'wine glass' or 'a jug', and in the second place, 'a glass', evidently meaning the glass which is usually placed on the marble tablet of the tomb. From سنگ مرار سنگ i.e. the tombstone, as it is customary to protect the epitaphs on the tombstones with glass-plates. Moreover the breaking of a wine glass is a common occurrence without any serious consequences. Or, the poet had another idea in his mind. He knew what is meant by death, and the destruction it caused to life in the universe, and so, he has compared the آگینه (glass) with the life of man both being frail and سنگ (stone) to death, or in other words, as the destruction of the glass is caused through its impact with stone, so life becomes extinct when it meets death.

آگینه حیات آید بر سنگ اجل

In my opinion the poet really intends to convey the idea that it is desirable to enjoy life to the fullest extent before one's death. He has also expressed the same views in other places, viz. :

آمد سعری ندا زمیخانه ما * کای رند خراباتی دیوانه ما
برخیز که پر کنیم پیمانه زمی * زان پیش که پر کنند پیمانه ما

At dawn a cry through all the tavern shrilled,
'Arise my brethren of the revellers' guild,
That I may fill our measures full of wine,
Or e'er the measure of our days be filled'.

(WHINFIELD.)

¹ Sir E. Denison Ross has (Bulletin of the School of Oriental Studies, Vol. IV, 1926-28, p. 437) given زمانه ایام instead of خیام زمانه.

² Ibid. آگینه و ناله چنگ.

برخیز و بیا بیا برای دلِ ما * حل کن بجمالِ خویش یک مشکلِ ما
یک کوزه می بیا تا نوش کنیم * زان پیش که کوزه‌ها کنند از گلِ ما

Arise! and come, and of thy courtesy
Resolve my weary heart's perplexity,
And fill my goblet, so that I may drink,
Or e'er they make their goblets out of me.

(WHINFIELD.)

Also a small inscription in the narrow space between the heads of two figures, reading 'Hakīm 'Umar Khayyām' in Persian.

This picture is of modern workmanship, but is artistic and attractive.

Mr. Percy Brown called attention to the process by which the work was produced, which he said was not stencilled, as described by the exhibitor, but the result was most probably obtained by means of printing with wooden blocks, and parts afterwards filled in with colours by hand. He did not agree with Dr. Hosain's statement that it was a 'beautiful picture', and thought it rather an ordinary modern production of no great æsthetic significance.

Dr. Hosain admitted that it was not a very high class picture in the modern sense of the term, but in his opinion the Persian dress, depicted in the natural colour, gave at least an idea of some æsthetic taste of the producer.

Mr. P. P. Chatterjee enquired whether the poet Omar Khayyām, in his Rubā'iyāts, wanted to give an allegorical meaning to wine glass and that whether he taught the doctrine of predestination referring to the lines: . . . where Destiny, with men for pieces play . . . as translated by Fitz-Gerald.

Dr. Hosain replied that in his opinion the poet had not the idea of predestination in his mind when he wrote this quatrain, but it seemed to him that he gave expression to the view of Hedonism or Utilitarianism in these lines which the European philosophers like Bentham, Mill, Sidgwick, etc., developed into a practical movement and an ethical theory by which they advocated that one should enjoy the greatest happiness of the greatest number. He also thought that the European philosophers had only enlarged or developed the doctrine of Utilitarianism of which 'Umar Khayyām had laid the foundation stone in the 12th century. He also believed that 'wine glass' and similar expressions had always been used allegorically by the Persian poets.

Mr. Hobbs said that in his opinion the picture conveys the meaning found in the last chapter of the Book of Proverbs, verses 4, 5, 6 and 7. These verses, even during the bitterest controversy of the past 40 years, do not seem to have been quoted either by those for, or against, Prohibition. They are a sad corroboration of the fact that the Bible is not read.

'It is not for kings, O Lemuel, it is not for kings to drink wine:
nor for princes strong drink:

'Lest they drink, and forget the law, and pervert the judgment
of any of the afflicted.

'Give strong drink unto him that is ready to perish and wine
unto those that be of heavy hearts,

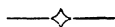
'Let him drink, and forget his poverty, and remember his misery
no more.'

3. PERCY BROWN.—*A metal Figurine of a Dancer.*

The figurine is 9½ inches in height and presumed to be of brass. Obtained from a Nepali dealer, but origin unknown. It

appears to represent a form of Śiva, but is very unusual in its treatment, although he holds the drum (*damaru*) in the shape of an hour-glass, and there is a serpent coiled round his neck, with another above his head. The statuette, although rather crudely modelled, is very spirited on its action, and the lively movement of the dance is vigorously represented by the position of the legs and arms, and the flying drapery.

Mr. *Percy Brown* explained that from subsequent investigations he had found that the figure was a representation of *Pauhuri*, a Nepalese or Tibetan interpretation of *Natarāja*. It had been made in Nepal, most probably by a small community of metal-workers who carry on that trade at *Daulakha* (*Dhankuta*?), a town some considerable distance to the east of *Khatmandu*, in the direction of *Darjeeling*.



JULY.

An Ordinary Monthly Meeting of the Royal Asiatic Society of Bengal was held on Monday, the 6th, at 5-30 P.M.

PRESENT.

RAI SIR UPENDRANATH BRAHMACHARI BAHADUR, Kt., M.A., M.D., Ph.D., F.S.M.F., F.R.A.S.B., F.N.I., Vice-President, in the Chair.

Members :

Agharkar, Dr. S. P.
Barwell, Lt.-Col. N.
Bhose, Mr. J. C.
Biswas, Mr. K. P.
Bose, Mr. M. M.
Brown, Mr. Percy
Chakravarti, Prof. Chintaharan
Chatterji, Dr. S. K.

Gangoly, Mr. O. C.
Hobbs, Mr. H.
Hosain, Dr. M. H.
Majumdar, Mr. N. G.
Mullick, Mr. M. L.
Ow-Wachendorf, Baron
Rao, Mr. U. S.
Vedantatirtha, Pandit V.

Visitors :

Barwell, Mrs.
Das Gupta, Mr. C. C.

Giskra, Baroness
Ray, Mr. B. B.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of eleven presentations of books, etc., which had been placed on the table for inspection.

The General Secretary announced that the following candidate would be balloted for as an Ordinary Member :—

(15) *Bakht, Muhammad Sanuwar*, Maulavi, Assam School Service Anglo-Arabic Teacher, Government High School, Sibsagar, Assam.

Proposer : M. Hidayet Hosain.

Seconder : Suniti Kumar Chatterji.

The General Secretary reported the following loss of membership, since the previous meeting, by death :—

(4) P. C. Nahar (An Ordinary Member, 1906).

Dr. S. K. Chatterji read an obituary notice of the late P. C. Nahar (see page 184).

The General Secretary reported the following loss of membership, since the previous meeting, by resignation :—

(10) Nico Reneman (An Ordinary Member, 1928).

The General Secretary reported that there had been no lapses of election, since the previous meeting, under Rule 9.

The General Secretary reported that there had been no withdrawals of application, since the previous meeting.

Exhibits were shown and commented upon and communications were made as detailed below.

The Chairman announced that His Majesty the King Emperor of India had been graciously pleased to grant permission to the Society to use the title 'Royal' before its name. The title of the Fellows of the Society, at present 'F.A.S.B.', would, as a consequential change, be 'F.R.A.S.B.'

The Chairman announced the result of the ballot for the election of the Ordinary Member and declared that the candidate had been duly elected.

The Chairman announced that no meeting of the Medical Section had yet been arranged to be held during the current month.

The Chairman bade farewell to Baron Ow-Wachendorf in the following words :—

The Baron joined this Society as soon as he came to Calcutta as the Consul-General for Germany. He took an active part in the affairs of the Society. At our Annual Meetings he used to exhibit specimens of archaeological and ethnological interest. Last year he made a presentation to the Society of the Official German Record of International Policies of the great European Powers from 1871 to 1914, in 40 volumes. The work is a very valuable addition to the Society's library and his generosity was deeply appreciated.

On behalf of the Society, I convey the best wishes to the Baron on the eve of his departure from Calcutta.

The following exhibits were shown and commented upon :—

1. SUNITI KUMAR CHATTERJI.—*A set of old Oriya Playing Cards.*

These round playing cards were in use in India,—at least in Eastern India,—before the coming of the European cards in the 18th century through the intermediacy of the Dutch. It is not known how old these round cards are, but judging from the fact that their symbolism is Hindu, they may be an

early Hindu or native Indian invention, like other sedentary games like chess and *pachisi*. The number varies from 96 to 120 and more,—the present set exhibited has 96. For the hearts, spades, clubs and diamonds of European cards there are lotuses, conchshells, clubs (the gada of Vishṇu), circles and squares; and different gods and goddesses also figure in these cards. Playing cards of this kind were current in West Bengal and in Orissa, and the making of them lingered on in Vishṇupur in West Bengal till recently. These cards have now become entirely obsolete, and very few people, if any, now know how to play them. The late MM. Haraprasad Sastri procured a set of Vishṇupur cards for the *Varṅgīya Sāhitya Pariṣad* and wrote an account of the manner of playing them in the Journal of that Institution.

The present set comes from Orissa. The cards are made of cloth stiffened with a ground made of gum, and the designs—mostly figures of a god and a goddess (or a human *nāyaka* and *nāyikā*), frequently in an amorous situation—are painted in brilliant colours. Pictures of Jagannāth and other Hindu gods used to be done on cloth in the same style at Puri, which pilgrims would carry home with them; now crude lithographs on paper have put an end to this form of temple art. The cards exhibited are small in size, being only about $2\frac{1}{2}$ inches in diameter. Vishṇupur cards are much bigger. They form very good specimens of Oriya painting in the traditional style, and they have a distinctive place in Indian miniature painting. Erotic scenes like those depicted in the present set are lacking in the similar type of round Vishṇupur cards, three different sets of which I have seen. The symbols—lotuses, conchshells, clubs, etc.—are more in evidence there than human figures. The set exhibited may be fifty to eighty or even a hundred years old.

Mr. Percy Brown remarked that it was interesting to compare this Orissan type of playing cards with the 'Ganjifa Dasavatār', a somewhat similar kind found in Hindustan. The latter were rather thicker than the Oriya cards, as they were made of papier-maché, and stated to be played with chiefly by Indian ladies. The Ganjifa pack consists of ten suites of twelve cards each, two of each suite being Court cards. They are based on the ten incarnations of Vishṇu, each suit representing one of these manifestations. The two Court cards depict the form of the incarnation, while the pips on the remainder of the suit repeat some attribute symbolic of the particular incarnation depicted, for instance in the Vāmana or dwarf incarnation the pips are represented by a lota, the Matsya by a fish, and so forth.

These cards were manufactured in several places in the Punjab and the United Provinces, the town of Khajjuha in the Fatehpur district being noted. There is a complete pack of these cards mounted in correct order on glass in the Art Section of the Indian Museum.

Dr. S. P. Agharkar remarked :—

The cards in question are similar to the cards known as 'Ganjiphā' in Mahārāṣṭra, which are still being used, although they are gradually

being out of use. The complete set consists of 120 cards and distributed over the ten incarnations of Vishṇu, each incarnation being represented by the King, the Vizir, and ten cards from the ace to No. 10. The King is the highest and the Vizir next in each suit. The relative importance of the other cards varies in the different suits, the ace being highest and the ten lowest in the incarnations of the Matsya (fish), Kūrma (tortoise), Varāha (boar), Narahari (man-lion), and Vāman (the dwarf); and in the incarnations of Parashurāma, Rāma, Krishna, Buddha and Kalaṅki (or Kalkin), the ten is the highest and ace the lowest.

The game is usually played by three persons, each playing separately. Very rarely a variation, in which four persons take part, is also played. When the play is to start, the cards are shuffled face downwards, the shuffling being called 'Galat' (mixing). The shuffled cards are arranged in a pile face downwards, and one of the players deals out the cards in fours after they are cut by the player on his left. After the cards are cut the person cutting turns up the card at the bottom and if it should be a king, the pile is recut. The first four cards of each player are exposed and if they include the king of the Rāma set during the day or the king of the Krishna set at night, it is taken out and placed on top of the cut half. The last four cards of each player are also exposed.

The cards are gathered by each player and arranged in the different suits in order of their value. The king of Rāma during the day and the king of Krishna during the night is called the 'Surkya' (the starter), and whoever had it among his cards, throws it along with one low card of any suit called his seat (Āsan). Both these cards are master cards, the other players throwing two cards of any colour on these.

He has next to play out together all the sequences of master cards that he may have, keeping the lowest of each as a cheque. This is called playing out 'Dukkal.' ('Dukkal'-twos, which is the shortest sequence possible). After this the player plays out a low card of the suit in which he holds the Vizir but not the King. The player who has the King must play it on this card; but he may win an additional trick under certain circumstances. This player in turn plays out his 'Dukkal' and plays a card of the suit in which he has the Vizir but not the King. An effort is made to pass the game to the 3rd player, as until this happens one can only play 'straight' i.e. one can only play a low card of the suit in which he has the next highest card, certain other types of play not being permitted. If, on the other hand, he has no Vizir (which is rare), but has only Kings and cards of minor value, he has to play out all his master cards. The remaining cards in his hand are shuffled, and the player to his right calls out a card from this, which is the suit in which the game is played. This is called 'Utari,' i.e. throwing down the master cards. The game is continued in this manner, each person who has the initiative playing out his master cards or going into another player's hand, so as to make some of his cards good. When all cards have been played out, the tricks each one has made are counted to find out whether one has more or less than 40, which denotes equality.

For the second deal the cards are shuffled again and dealt by the player to the right of the first dealer. Before the play commences, however, a player who has made more than the requisite number of cards in his first deal has the right to call out any cards from among those dealt to the loser, and return any cards from among his own. For this purpose the cards are kept face downwards and the winner calls out by number those he wants. They are turned upwards and mixed in the cards held by the winner and the winner returns an equal number of cards to the loser so that each player holds the same number of cards before play commences again.

The play in the second deal is similar to that in the first. At the end of the second deal it is usually found that one of the players has won very few tricks. In the third deal the cards are dealt with as before, and cards are also taken from the loser. The result is that this player holds

very low cards. The game is to prevent him from winning any trick which is called 'Kādi' (straw), signifying bankruptcy. He has, however, the chance of preventing this by winning the last trick, which is called 'Akheri' (the last). If he wins the last trick on a card played by the player on his left, all his debt is wiped out, if on a card played by the player on his right he is free of the debt due to that player only. If in the last trick the cards of all players are of the same colour, it is called 'Rangeri' (one colour).¹

It is customary to achieve this in 3 to 4 deals, if this does not happen the game is called a draw. It is not possible to explain all the finer points of the game in this brief note, but I must mention that there are at least half a dozen Mahārāshtrians in Calcutta who can play the game quite well. Even in Mahārāstra, however, the game is dying out and perhaps may become extinct in the next generation.

The cards are manufactured at Sawantwadi. They are made of paper which is coated by a lac dye uniformly on the back and with pictures and diagrams on the front. Whether the game was indigenous or it was borrowed from the Persians it is difficult to say. The use of the ten Avatāras for the ten suits is distinctively Hindu, as also several of the terms in use. On the other hand the term 'Ganjīphā' as well as some other terms such as 'Galat, Nāta-wāni, Tawānir' are non-Indian. It is quite possible that the game is originally Indian which was subsequently modified. The use of Persian and Arabic terms is probably due to the use of words from these languages having become common during the Muslim rule.

Prof. Chatterji expressed his grateful appreciation of Dr. Agharkar's remarks. He was glad to find that the use of the Daśāvatāra cards for games was a living tradition in at least one part of India—Mahārāshtra. He remembers how in his childhood his maternal grandmother and other elderly ladies used to play a game with Daśāvatāra cards, which were oblong and not round, and were made of cardboard, the designs being printed by lithograph in Calcutta. These Bengali Daśāvatāra cards are no longer in vogue, and are not available any more.

In Mahārāshtra, as Dr. Agharkar tells us, these cards are known as (Daśāvatāra) *Ganjīfa*. The word (*Ganjīfa*) is Persian. The common word in Northern India to mean cards is *Tās* or *Tāsh*. The word seems to be connected with *Tās*, *Tāsā* or *Tāsh*—a kind of heavily embroidered cloth, the decorative designs on the back of European cards of the old style probably giving rise to the name.

India is reputed to be the home of the chess, of the *Pachīsī* and a number of other sedentary games. It is well worth looking up from Sanskrit literature whether there is any reference to game of cards.

Mr. O. C. Gangoly remarked :—

These cards raise very interesting questions as to the origin of the game of cards. MM. Haraprasad Shastri contributed two articles in our *Journal* in 1895 (JASB, LXIV, 1895, Part I, 284-5) and JPASB, 1896, p. 2-3) —in which he had boldly suggested that the Malla Kings of Vishnupur were the originators of this game, and that these cards may go back to about the 8th century A.D. If his suggestion can be proved, then India could claim to be the originator of this game. This class of circular cards occur in all parts of India. About 20 years ago I purchased a set of somewhat similar cards which came from the district of Bellary. I have also collected two sets from Rajputana—one of which may be as old as the 16th century.

Prof. C. Chakravarti said :—

MM. H. P. Shastri gave a description of the game as played in Vishnupur with cards depicted with representations of the ten incarnations of

¹ When this happens the mutual debts of all players are cancelled and the game is a draw.

Viṣṇu in which the Buddha occupies the fifth and not the ninth position, as is more usually the case in the Daśavatāra list. He also referred to the fact that the plain Buddha cards were marked by lotuses. These facts, as also a local tradition that the game was invented by the Malla Rājās, had led the MM. to suggest that the game was as old in India as 700-800 A.D. Before arriving at any conclusion, what is essential is the collection and study of the various types of these cards, with the varieties of games played with them like those described by MM. H. P. Shastri and Dr. S. P. Agharkar. This is expected to throw light on the antiquity of the things in India and their connection with those of a similar nature in Europe and elsewhere. If the game is an extension of the Indian chess (as has been suggested by Singer) it may also prove to be of Indian origin. In any case, a thorough study of these materials needs be zealously undertaken before they become totally obsolete with the lapse of time. A description of the game in Sanskrit is found in a very late work, e.g., the *Gaṇjīphākhelana* (Kāvyamālā, Vol. XIII, pp. 81-4) of Giridhara, son of Śaṅkara, grandson of Śiva, the astronomer, and author of a work on chess, fragments of which are known in MSS.

Mr. H. Hobbs said :—

It seems to show the antiquity and wide use of playing cards in India, which are possibly even older than the loaded dice found in the ruins of Pompeii.

One can well believe that the old inhabitants had many among them who were like the modern American who complained that 'I know so little about cards that I cannot tell who is going to win unless I deal myself.'

2. N. G. MAJUMDAR.—*A terracotta Toy-cart in the Indian Museum.*

This is a unique specimen of a terracotta toy-cart which has been in the Museum for many years. Its findspot is unknown. The cart has six passengers represented in relief including two women, who are all in festive mood and enjoying themselves. The party is engaged in eating and music, as may be seen from a tray containing eatables, a *tabla* and a harp. A similar example of a toy-cart has recently been discovered at Kosam in Allahabad District, and it is very likely that this one also came from the same place. On artistic grounds it may be placed in the Sunga period (about 150 B.C.).

Mr. N. G. Majumdar remarked :—

This toy-cart was lying amongst the unaccounted-for objects stored in the godowns of the Archaeological Section of the Indian Museum. There is no record to show when and from where it came.

It is made of clay and measures about 6½" in length, 5" in breadth, and 3" in height. There is a hole on one side showing the place where a wheel was fitted. The portion containing the hole on the opposite side for the other wheel has broken off and is lost. The projecting front portion of the cart is pierced with three holes evidently to fix a stick to which a string might be fastened for propelling the cart.

The two sides of the cart above the wheel bear decorations in relief which are disposed of in two parallel horizontal lines, the upper one consisting of an array of bells and the lower of flowers. A line of bells occurs also on each of the overhanging top edges of the cart. Within it six persons are seated, the figures being represented in relief. Two men with a woman in between are shown along each side of the cart.

Of the two groups one shows a man playing on a harp and a woman on a *tabla*-like instrument, and a man is probably offering her something out of a tray of eatables. The other group shows a man eating from the same tray, also a woman and a man in an amorous attitude. The decoration consisting of bells and flowers as well as the treatment of the figures suggests that the object belongs to the Sunga period, 2nd-1st centuries B.C. An exactly similar clay cart has been recently discovered at Kosam (ancient Kauśāmbi) in Allahabad District. It is now kept in the Allahabad Museum. A notice of this clay cart has been published by Rai Bahadur Daya Ram Sahni in *Indian Art and Letters*, Vol. VIII, No. 2, p. 122, fig. 10. The present example seems to be much better preserved than the Allahabad Museum specimen. Mr. Sahni assigns it to *circa* 3rd century A.D. which date appears to be too late. The combined bell and flower motifs occur on the Bharhut railing and on certain terracottas of the Sunga period discovered at Bhita. Mention may be made of a terracotta fragment No. N.S. 1189 in the Indian Museum collection, which also bears this pattern.

In this connection I may draw your attention to another clay cart, but of a different type, from Kosam (Indian Museum No. 7400). It shows two bulls in relief represented as drawing the cart. The chief decorative elements are again the same bells and flowers.

Although the find-spot of the toy-cart that has been exhibited is not known, the discovery of a similar one at Kosam shows that this must have also come from that place. Miniature carts in metal and terracotta as children's favourite toys have been known from ancient times in India. A little clay cart for a child is mentioned in the well-known Sanskrit drama called, *the Mṛichchhakaṭika*, composed by Śūdraka.

Mr. Charu Chandra Das-Gupta said :—

The present speaker opines that one terracotta panel representing a toy-cart discovered by the late Sir Alexander Cunningham in the ruined mounds of Newal should be compared with the present exhibit for some points of similarity (Archæological Survey of India, Reports, Vol. XI, p. 53, pl. XVIII, No. 3, 1880). This specimen which is 7½ in. high is mutilated; but much remains to show that it is a cart drawn by bullocks with a man seated above and holding something by the right hand. It is also interesting to note that this man is not the driver as he is not facing to the front but to the back when the cart, from the movement of the hind legs of the bullocks, appears to be in motion. From this it may be possibly surmised that one or more human beings were represented, facing him in an attitude of talking to him in the mutilated back portion of the cart. In the like manner there might have been represented the driver in the front portion of the cart.

Dr. Suniti Kumar Chatterji said :—

Two things are noticeable in the fragmentary terracotta with the convivial party in the cart. The idea was to depict a group of people seated on a plane. The modeller could not manage the figures in the round—he did them in bas relief. There are ancient Greek terracottas in which we find quite a successful rendering of two or more figures in the round forming parts of the same group. In Negro terracottas of West Africa, this kind of grouping of figures in round forms a very attractive feature. Then again, it is noticeable that there is considerable amount of movement and character in the figures. There are musicians, whose characteristic attitudes are very striking. The figures of the men with tray of refreshments between them are also done with considerable vigour.

The dress and the general style of ornamentation and the appurtenances certainly indicate that this fragment is Sunga, and pre-Christian.

Mr. U. Shanker Rao said :—

It seems to me from the shape of the axle that behind it possibly lies an attempt to distribute the pressure on the wheels. The axle does not appear to be quite straight and it will be noticed that there is a small knob on it at either journal end. Possibly the model is a poor specimen of the actual cart and does not show all the details. But these knobs were perhaps in a different position on the axle allowing the wheels more play and diffusing the pressure on the bearings. A recent issue of a motor-ing magazine gives an interesting description of the axle arrangement on bullock carts, and I am inclined to believe from the shape of the axle in the terracotta model that that was one of the earliest attempts made to achieve a better distribution of pressure on the wheel bearings. Springs do not seem to have been used on the axle.

Mr. Percy Brown said that the particular example exhibited had evidently been prepared by being pressed in a mould, most probably a terracotta mould. The model also suggested some primitive form of spring to the axle of the cart wheel, which he thought rather early for this to appear.

After the showing of the exhibits the following communication was made :—

1. N. BARWELL.—*Influence of Oriental motifs upon book-bindings in Europe from the 15th to the 18th century.*

From the earliest times in Europe leather was used to cover the boards which in fact formed the preservative cover for manuscripts. Prior to these protective measures literature was not preserved in a form to which the word 'book' could properly be applied. The earliest decorative bindings were those on which stamps were made from the impress of metal seals. The designs of these seals or dies tended to be heraldic in character. In the nearer east the art of Arabia and Persia lent itself to decorative book-binding; and ornament, arabesque in origin and character, reaches a high degree of perfection in the illumination of manuscripts and as an adornment to book covers in Persia. The materials used for book covers in Persia were peculiarly suited for developing a design whose main characteristics are to be found similarly developed in ceramics, in textile fabrics, in embroideries, and in chased metal work.

By the beginning of the 16th century objects of art of oriental workmanship, especially those from the Middle East, were finding their way to Europe, where, from the first, they were highly prized. They entered Central Europe by the great Italian ports of Venice and Genoa. The Turks—never an artistic race—brought practically nothing of beauty with them, though they penetrated to the gates of Vienna and held many a Danubian position of strength from Budapest to the Black Sea. Oriental art, however, made a direct entrance into Spain; and by the Spaniards was carried to the north-west of Europe when they took possession of the Netherlands. Some slight influence is observable in Russian book-binding. But, for the most part, the influence moves through Italy into

France and thence into England, where it greatly affects design during the 16th century.

The communication was illustrated partly by specimens of work in possession of the Society, but more by reference to coloured and other reproductions of decorative book-bindings in Mr. Hobson's Book-bindings in Cambridge Libraries, a work towards which the author, in some sense, personally contributed.



SEPTEMBER.

An Ordinary Monthly Meeting of the Royal Asiatic Society of Bengal was held on Monday, the 7th, at 5-30 P.M.

PRESENT.

RAI SIR UPENDRANATH BRAHMACHARI BAHADUR, Kt., M.A., M.D., Ph.D., F.S.M.F., F.R.A.S.B., F.N.I., Vice-President. in the Chair.

Members :

Agharkar, Dr. S. P.
Brown, Mr. Percy
Chanda, R.B. R.
Driver, Mr. D. C.
Flury, Mr. E. C.
Gangoly, Mr. O. C.

Hobbs, Mr. H.
Hosain, Dr. M. H.
Jenkins, Dr. W. A.
Rahman, Mr. S. K.
Sen, Mr. J. M.
West, Mr. W. D.

Visitors :

Acharji, Mr. M. N.
Choudhuri, Mr. S. P.

Husain, Mr. S. Wajahat
Sarkar, Mr. Sasanka

Before opening the meeting, the Chairman announced that His Excellency the Viceroy and Governor-General of India had been graciously pleased to become a Patron of the Society.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of twenty-four presentation of books, etc., which had been placed on the table for inspection.

The General Secretary announced that the following candidates would be balloted for as Ordinary Members :—

(18) *Mandhata, H. C.*, M.A. (Allahabad), Teacher, formerly Lecturer in History, Agra College; Ghaziabad, Meerut.

Proposer : Sir Upendranath Brahmachari.
Secunder : M. Hidayet Hosain.

(19) *Gangooly, Phanindra Lal*, M.A., Lecturer in Mathematics, Calcutta University; P-507, Rash Behari Avenue, Calcutta.

Proposer : Sir Upendranath Brahmachari.
Secunder : S. L. Hora.

(20) *Sarkar, Bijali Behari*, M.Sc. (Cal.), D.Sc. (Edin.), F.R.S.E., Lecturer in Physiology, Calcutta University; 33/3, Lansdowne Road, Calcutta.

Proposer : Sir Upendranath Brahmachari.

Secunder : N. G. Majumdar.

(21) *Singh Roy, The Hon'ble Sir Bijay Prasad*, Kt., Minister, Government of Bengal; 15, Lansdowne Road, Calcutta.

Proposer : Sir Upendranath Brahmachari.

Secunder : M. Hidayet Hosain.

(22) *Sinha, Jadunath*, M.A., Ph.D., Premchand Roychand Scholar, Professor of Philosophy, Meerut College, Meerut, U.P.

Proposer : B. R. Chatterji.

Secunder : M. Hidayet Hosain.

(23) *Ram, Daulat*, Accountant, Military Secretary's Office, c/o Messrs. Biru Mal Chiranji Lal, Chhatta Magni Ram, Patiala.

Proposer : M. Hidayet Hosain.

Secunder : J. N. Mukherjee.

(24) *Bagchi, Kumar Nath*, Rai Bahadur, B.Sc., M.B. (Cal.), D.T.M. (Cal. & L'pool), F.I.C. (Lond.), Chemical Examiner to the Government of Bengal, Medical College, Calcutta.

Proposer : Sir Upendranath Brahmachari.

Secunder : M. Hidayet Hosain.

(25) *Williams, N. T.*, Messrs. Orr, Dignam & Co., 32, Dalhousie Square, Calcutta.

Proposer : Sir M. N. Mukherjee.

Secunder : Sir B. L. Mitter.

The General Secretary reported the following loss of membership, since the previous meeting, by death :—

(5) Dr. Snouck Hurgronje (An Honorary Fellow, 1927).

(6) Lt.-Col. R. Knowles (An Ordinary Member, 1920; Ordinary Fellow, 1927).

The Chairman called upon Dr. M. Hidayet Hosain to read an obituary notice of Dr. Snouck Hurgronje (see page 185).

The Chairman then read an obituary notice of Col. Knowles, written by Dr. L. E. Napier (see page 187).

The General Secretary reported receipt of news of the death of :

Sir Alexander Stow (An Ordinary Member of the Society from 1923 to 1934).

The General Secretary reported the following loss of membership, since the previous meeting, by resignation :—

(11) Bisweswar Bhattacharya (An Ordinary Member, 1908).

(12) Amareswar Thakur (An Ordinary Member, 1932).

(13) Baron Ow-Wachendorf (An Ordinary Member, 1934).

(14) Nawab M. Muzammil-Ullah Khan (An Ordinary Member, 1921).

The General Secretary reported that there had been no lapses of election, since the previous meeting.

The General Secretary reported that there had been no withdrawals of application, since the previous meeting.

The Chairman announced that in accordance with Rule 45, the Council submit for confirmation to the meeting the following change in the constitution of the Council, made in one of the Council Meetings, held since the last Ordinary Monthly Meeting :—

Library Secretary—Mr. Percy Brown, *vice* Dr. A. M. Heron, who has gone on leave.

The appointment was confirmed.

After these announcements, the Chairman vacated the chair, which was then occupied by Mr. Percy Brown, Member of Council and Library Secretary.

Papers were presented as detailed below.

The Chairman announced the result of the ballot for the election of Ordinary Members and declared that all the candidates had been duly elected.

The Chairman announced that no meeting of the Medical Section had yet been arranged to be held during the current month.

The Chairman announced that, unless special notice was given, there would be no Ordinary Monthly Meeting during the recess month, October.

The following papers were read :—

1. COL. J. FROILANO DE MELLO.—*Further Contributions to the Study of the Blood Parasites of the Indian Birds, together with a List of the Hemoparasites hitherto recorded.*

In this paper the author gives a complete list of the Hemoparasites recorded from Indian birds and discusses their classification and relationships. In addition, he describes a number of new species of Hæmoproteids which he has studied in detail from Nova Goa and other places.

2. A. BANERJI-SASTRI.—*The Nāgas in the 3rd and 4th Centuries A.D.*

According to V. A. Smith the history of India in the 3rd century A.D. is wrapped in obscurity at present impenetrable. Mr. K. P. Jayaswal challenges this view and endeavours to prove that there was a mighty Bhāraśiva Nāga empire from c. 31 B.C. to 284 A.D. that merged in the Vākātaka empire (c. 284 A.D. to 348 A.D.). Mr. Jayaswal's reconstruction is based on two lines of a single inscription. After an examination of the evidences the writer concludes "As such a Bhāraśiva Nāga Empire must remain, pending further corroboration, a figment of the imagination". A large number of independent States flourished in Northern India side by side in the 3rd and the 4th centuries A.D. The writer also criticises the views of

Mr. Jayaswal relating to the Nāgas of Vidisa and in conclusion discusses the chronology of the other contemporaneous Nāga dynasties including one founded by Nava.

Mr. W. D. West asked :—

What were the two lines of the inscription, on which Mr. Jayaswal based his conclusions ?

Rai Bahadur R. Chanda replied : V. A. Smith's remarks that the history of India in the 3rd century A.D. is wrapped in obscurity refers to the dynastic and not to the cultural history. There are specimens of sculpture that may be tentatively assigned to the 3rd century A.D.

Mr. Percy Brown said that although no doubt there was obscurity in the dynastic history of India in the 3rd century A.D., a view first advanced by R. C. Datta, and afterwards confirmed by V. A. Smith, this did not apply to the cultural history of the country, the course of which is fairly clear owing to the notable artistic and architectural records of the period that have been preserved. The excavations at Taxila, the collections at Mathura and other historical sites which have been explored shed considerable light on the conditions that prevailed in the north, while the stupa of Amaravati is evidence of Buddhist activity in the south. It appears that from its cultural aspect the 3rd century A.D. was a period more of stagnation than obscurity, yet on the political conditions of the country at this time any reliable data would be most valuable.

3. SASANKA SEKHAR SARKAR.—*The Social Institutions of the Mālpāhāriās.*

The Mālpāhāriās are an aboriginal tribe occupying the southern portion of the Rajmahal hills in the Santal Parganas who have adopted Hinduism and most of whom speak a Bengali dialect. The Mālpāhāriās of the Dumka sub-division are divided into eleven social groups or septs. Marriage tie is very loose among them. The writer attributes this to excessive alcoholism. The Mālpāhāriās at present use Bengali terms of kinship of which a list is given. He also describes the name-giving, marriage, and funeral rites of the tribe.

4. SAYYID WAJAHAT HUSAIN.—*Āzād Bilgrāmī.*

In this paper the author deals with an exhaustive life-history, and the contributions to Islamic literature of as-Sayyid Ghulām 'Alī Āzād bin as-Sayyid Nūh al-Husainī al-Wāsiṭī, otherwise known in the literary world as Āzād Bilgrāmī.

Āzād's early life and nativity. Scholastic career under Mawlānā 'Abd al-Jalīl and Sayyid al-'Arifīn Mir Sayyid Luṭ-fallāh. Itinerary in Northern India and Southern India. Acquaintance with Nawwāb Āṣaf Jāh of Deccan, and subsequent enlistment as a soldier in his army. Pilgrimage to Mecca. Death.

The author gives a detailed list of the works of Āzād and marks him out as an erudite scholar and linguist with mastery in Arabic, Persian, Sanskrit, Urdu, and Hindi, well worth the appellation *Hassān al-Hind*. He also points out that the literary activities of Āzād were not confined to linguistics alone,

but extended to a wide field including literature, history, poetry, biography, and the Ḥadīth, placing him among the foremost writers of his age.

Mr. *Wajahat Husain* said :—

Āzād Bilgrāmī was born on Sunday, the 25th Ṣafar, 1116 A.H. (1704 A.D.), in Maidānpūra, a locality in Bilgrām. He received his early education from Mir Tufail Muḥammad and as-Sayyid Muḥammad bin 'Abd al-Jalil. Next he studied under his maternal grandfather as-Sayyid 'Abd al-Jalil Bilgrāmī. After completion of his studies he was appointed as Paymaster General at Sivistān in Sind in which capacity he served for about 4 years and after tendering his resignation returned home. Three years later, he set out on pilgrimage on foot and reached Saronj in Mālwa. He served in the army of Nawwāb Aṣaf Jāh and on the termination of the war with the Mahrattas proceeded on his journey to the Sacred Place. He stayed with Muḥammad Fākhir Ilāhābādī and after pilgrimage read Ḥadīth from ash-Shaikh 'Abd al-Wahhāb at-Taṭāwī. Then he visited the famous shrines in Ṭā'if and Jedda and dedicated the last part of his life to teaching and writing books. He died in 1200 A.H. (1785 A.D.) and was buried at Aurangābād, Deccan.

Āzād was an erudite scholar and well versed in numerous branches of learning. His literary achievements won for him the celebrated appellation of *Hassān al-Ḥind*. As a scholar and linguist he acquired a fame which few people can attain and had command over Arabic, Persian, Sanskrit, Urdū and Hindi. His literary activities marked for profundity and elucidity cover a wide field ranging over Ḥadīth, literature, history, poetry and biography.

A brass Utensil pierced by Hail-stone on 8th March, 1936, collected by Dr. J. N. Mukherjee, could not be exhibited on account of his unavoidable absence.



NOVEMBER.

An Ordinary Monthly Meeting of the Royal Asiatic Society of Bengal was held on Monday, the 2nd, at 5-30 P.M.

PRESENT.

RAI SIR UPENDRANATH BRAHMACHARI BAHADUR, Kt., M.A., M.D., Ph.D., F.S.M.F., F.R.A.S.B., F.N.I., Vice-President, in the Chair.

Members :

Bagchi, Mr. K. M.
Bose, Mr. M. M.
Chanda, R.B. R.
Brahmachari, Dr. P.
Brown, Mr. Percy
Guha, Dr. B. S.
Haq, Mr. M. Mahfuz-ul

Hobbs, Mr. H.
Hossain, Dr. M. H.
Mukherji, Dr. J. N.
Mullick, Mr. M. L.
Wadia, Mr. D. N.
West, Mr. W. D.

Visitor :

Ghosh, Mr. P. K.

The minutes of the last meeting were read and confirmed.

The General Secretary reported receipt of sixteen presentations of books, etc., which had been placed on the table for inspection.

The General Secretary announced that the following candidate had been elected an Ordinary Member during the recess month, under Rule 7 :—

(25) *Bothra, Subhakaran*, B.A., Land-holder and Student, 3 Vivekananda Road, Calcutta.

Proposer: A. F. M. Abdul Ali.

Seconder: D. R. Bhandarkar.

The General Secretary reported that there had been no loss of membership, since the previous meeting, by death.

The General Secretary reported the following loss of membership since the previous meeting, by resignation :—

(15) Mirza Mohammed (An Ordinary Member, 1932).

(16) R. C. Hobart (An Ordinary Member, 1928).

The General Secretary reported that there had been no lapses of election, since the previous meeting.

The General Secretary reported that there had been no withdrawals of application, since the previous meeting.

Papers were read as detailed below.

Exhibits were shown and explained as detailed below.

The Chairman announced that no meeting of the Medical Section had yet been arranged to be held during the current month.

The following paper was read :—

1. PADMANATH BHATTACHARYYA.—*Location of the Land granted by the Nidhanpur Grant of Bhāskara-varman of Kāmarūpa.*

This article is a rejoinder to a paper with the same title that was published in the Society's Journal in last April by Dr. N. K. Bhattasali, in which the writer had concluded that the location of the land granted by Bhāskara-varman was in Sylhet. In this paper, the author has endeavoured to prove that the location of the land related to a place in Rangpur and not in Sylhet. Arguments. Interpretation of the inscription. Discussions.

The following exhibit was shown and commented upon :—

1. J. N. MUKHERJEE.—*A brass Utensil pierced by Hail-stone on 8th March, 1936.*

On the 24th Falgun, 1342 B.S. (8th March, 1936), there was a gust of wind accompanied with slight rain which lasted about 10 minutes in the vicinity of Mondalgram, P.S. Satgachia, Dt. Burdwan. It took place at about 7-30 P.M. Next day at

6-30 P.M. there was a severe hailstorm (Nor'wester) in the locality: the unusual feature was the large size of the stones and the velocity with which they came down. Mr. Rabindranath Bhattacharyya of the above village, who was coming from a neighbouring village, was caught in the storm and was rendered unconscious. On regaining consciousness he attempted to reach the village but swooned again. He was later rescued in time by some men. Gour Bagdi, of village Koshigram, P.O. Nashigram, P.S. Bhatar, Dt. Burdwan, and another person are reported to have died near the same spot. The police it is reported removed the bodies. Mr. Bhattacharyya states that the stones were about a pound in weight. He tried to protect himself with his umbrella but he fell down and felt as if he had been struck by a log of wood. He was attended to by a medical man of the village, Dr. Anil Mukherjee. He was in a state of stupor till 2 A.M. and had 102° temperature. The fever persisted for eight days and he was confined to bed for twelve days. It was reported that brass utensils lying on the shaded veranda of houses in the village were pierced by the hailstones leaving holes as if they were struck by bullets. One of these brass utensils is exhibited. Raneegunge tile roofs have also been broken through, stones passing into the interior of the house. Palm trees have been denuded of their leaves and barks torn off on the side on which the stones struck. As often happens in such storms corrugated iron roofs of a house were bodily removed. Some of these corrugated iron sheets have been flattened by the impact.

Mr. H. Hobbs said:—

What do we know about hail? To me, hail is one of the most remarkable of Nature's phenomena. We are told that it is frozen vapour, clouds suddenly turned into ice—but is it?

Hail is almost unknown in Rangoon but fifty years ago I saw pieces of ice as big as my fist fall during a hail storm there. At Shwebo, Upper Burma, in December, 1922, a hailstone was found to weigh four pounds.

It is on record that about 1870 a hailstone as big as an elephant fell in South India. I cannot prove it but it may be true.

At Angola, in Portuguese West Africa, a hailstorm caused the death of a large percentage of the people. The temperature dropped from over 100 to between 40 and 50 and the change was fatal to so many. I have seen drifts of hailstone three feet deep in Calcutta. On June 4, 1927, hail in Kansas U.S.A. piled into drifts from 8 to 15 feet deep. Fields were rendered as bare as a highway. Horses, cattle, pigs, sheep, smaller animals and birds were killed by the hundred. Many of you must remember the hailstorm many years ago which killed thousands of crows. Under one tree on the Calcutta Maidan I counted 281 dead crows. On May 1, 1888 (one of the hottest years I ever experienced), 250 human beings were killed by hail in the Moradabad District.

In Trichinopoly Cantonment on May 11, 1929, a hailstone was picked up on the roof of a house, twenty minutes after the hailstorm had stopped. It measured 4 and $\frac{1}{4}$ inches long. Another was picked up that was over 5 inches in diameter.

At Potter, Nebraska, U.S.A., on July 6, 1928, a hailstone measured 17 inches in circumference and weighed 24 ounces.

On June 15, 1929, at Cazorla, Spain, houses were crushed under the weight of the ice that fell.

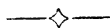
25,000 people harvesting fruit, farmers and labourers were thrown out of work by a hailstorm in Hungary in 1922.

Herds of mammoth elephants, 15 feet high with long hair covering their bodies, are found in the ice in Siberia today. Every three or four years a ship is filled with their ivory and bones and sent to England where there is a pukka market for mammoth ivory and bones. It is estimated that these elephants have been 50,000 years or more in the ice.

The elephants' heads are said to all face the north. Whole herds must have been overwhelmed at one time. The flesh is edible today. Without being a scientist I incline to the belief that these animals were the victims of a hailstorm. Had they been in search of water they would have scattered. Being close together it looks as if ice had smothered them. The fact that the flesh is still wholesome proves that the interval of time between living and frozen must have been extremely short. Other explanations may be given; that is mine. It is possible that the climate of the whole world could be changed by hail. But, as I asked before, what do we know about hail?

Rai Bahadur R. P. Chanda enquired about the size of the stones and the metal of the utensil.

Dr. Mukherjee said :—Some weighed about 2 lbs. and even more. I presume that the metal is brittle and that may explain. Besides, the acceleration due to gravity has probably been aided by the velocity of the wind.



DECEMBER.

An Ordinary Monthly Meeting of the Royal Asiatic Society of Bengal was held on Monday, the 7th, at 5-30 P.M.

PRESENT.

SIR DAVID EZRA, Kt., F.Z.S., M.B.O.U., Vice-President,
in the Chair.

Members :

Bose, Prof. M. M.
Bothra, Mr. S. K.
Brown, Mr. Percy
Chakravarti, Prof. C.
Dods, Mr. W. K.
Dugin, Mr. L. S.
Gurner, Dr. C. W.
Harley, Mr. A. H.
Hobbs, Mr. H.

Jack, Hon. Mr. Justice, R. E.
Jenkins, Dr. W. A.
Kayyathirtha, Mr. R. D.
Lal, Mr. R. B.
Manen, Mr. Johan van
Mukherjee, Dr. J. N.
Prashad, Dr. Bains
Wadia, Mr. D. N.

Visitors :

Banerjee, Mr. A.

Esteller, Fr. Dr. A.

Rankin, Mrs. E. H.

The minutes of the last meeting were read and confirmed.

The General Secretary reported of six presentations of books, etc., which had been placed on the table for inspection.

The General Secretary announced that the following candidates would be balloted for as Ordinary Members :—

(27) *Basu, Indubhusan*, M.D. (Cal.), Medical Practitioner, Associate Professor of Medicine and Visiting Physician, Carmichael Medical College ; 19, Vivekananda Road, Calcutta.

Proposer : Sir Upendranath Brahmachari.

Seconder : J. N. Mukherjee.

(28) *Dutt, Raghunath*, Merchant, 167, Old China Bazar Street, Calcutta.

Proposer : Sir Upendranath Brahmachari.

Seconder : J. N. Mukherjee.

(29) *Mitra, Sarat Chandra*, M.L.C., Landholder, 34, Shampukur Street, Calcutta.

Proposer : Sir Upendranath Brahmachari.

Seconder : Percy Brown.

(30) *Daga, Madangopal*, Merchant and Landlord, 374, Upper Chitpore Road, Calcutta.

Proposer : Sir Upendranath Brahmachari.

Seconder : J. N. Mukherjee.

(31) *Banerjee, Satyendra Mohan*, B.A. (Cal.), M.A. (Cantab.), I.C.S., Secretary, Board of Revenue, Bengal ; 18/1, Ballygunge Circular Road, Calcutta.

Proposer : Sir Upendranath Brahmachari.

Seconder : Percy Brown.

(32) *Sen, Dharendra Nath*, Merchant and Landlord, 7, Rawdon Street, Calcutta.

Proposer : Sir Upendranath Brahmachari.

Seconder : J. N. Mukherjee.

(33) *Gillespie, Andrew Dollar*, Chemist and Senior Partner, Messrs. Bathgate & Co., 17, Old Court House Street, Calcutta.

Proposer : Sir Upendranath Brahmachari.

Seconder : J. N. Mukherjee.

(34) *Ghosal, Saradindu Mohan*, M.B. (Cal.), M.R.C.P. (Lond. & Edin.), Lecturer in Medicine, Prince of Wales Medical College, Patna.

Proposer : Sir Upendranath Brahmachari.

Seconder : J. N. Mukherjee.

(35) *Bose, Ambuj Nath*, M.B.E., M.D. (Lausanne), F.R.C.P. (Edin. & Lond.), Lt.-Col., I.M.S., Medical College, Patna.

Proposer : Sir Upendranath Brahmachari.

Seconder : J. N. Mukherjee.

(36) *Banerjee, Tridib Nath*, M.B., M.R.C.P. (Lond. & Edin.), Professor of Medicine, Medical College, Patna.

Proposer : Sir Upendranath Brahmachari.

Seconder : J. N. Mukherjee.

(37) *Mookerjee, Benode Gopal*, Zemindar and Merchant, 'Bakulia House', Kidderpore, Calcutta.

Proposer : Sir Upendranath Brahmachari.

Seconder : Phanindranath Brahmachari.

(38) *Austin, Arthur C.*, Civil Engineer, Deputy Chief Engineer, B.N. Railway, 16, Garden Reach Road, Calcutta.

Proposer : Sir Upendranath Brahmachari.

Seconder : Phanindranath Brahmachari.

The General Secretary reported that an application for Institutional Membership had been received from:

(10) The President, Forest Research Institute, Dehra Dun,

which had been accepted by Council.

The General Secretary reported that there had been no loss of membership, since the previous meeting, by death.

The General Secretary reported the following loss of membership, since the previous meeting, by resignation:

(17) *Gopichand Chopra* (An Ordinary Member, 1928).

The General Secretary reported that, in accordance with Rules 37 and 38, the names of the following Ordinary Members would be suspended as defaulters within the Society's building for the period of a month, to be removed from the Society's registers for non-payment, unless the amount due be paid before the next monthly meeting:

(1) Shiv Bandhan Pande	..	..	Due Rs.72.
(2) G. T. Sutling	..	..	Due Rs.66.
(3) J. P. Shukla	..	..	Due Rs.72.
(4) S. P. Sinha	..	..	Due Rs.72.

In accordance with Rule 40, the General Secretary reported that the names of the following members had now been removed from the member-list of the Society.

- (1) Count Bassewitz.
- (2) Andrew Fleming.
- (3) R. Friel.
- (4) R. Y. Jarvis.
- (5) Thornton Jones.
- (6) Hans. Koester.
- (7) C. E. Lomax.

The General Secretary reported that there had been no lapses of election, since the previous meeting, under Rule 9.

The General Secretary reported that

(1) M. S. Bahkt (elected on 6-7-36)

had withdrawn his application for membership.

The General Secretary reported that the Council, since the previous meeting, had co-opted Rai Sir Upendranath Brahmachari Bahadur, as a member of the Standing Committees of the Society for the remainder of the year.

Papers were read as detailed below.

Exhibits were shown and commented upon as detailed below.

The Chairman announced the result of the ballot for the election of Ordinary Members and declared that all candidates had been duly elected.

The Chairman announced that no meeting of the Medical Section had yet been arranged to be held during the current month.

The following papers were read :—

1. A. BANERJI.—*A Buddha Image from Kurkihār.*

Kurkihār is now a small village, about 23 miles east of Bodh-Gaya. It was visited by Major Kittoe in 1846 and 1848 who dug up a large number of statues from one of the mounds and deposited them with the Asiatic Society of Bengal, from where these have now found a place in the Indian Museum, Calcutta. The place was also visited by the late Sir Alexander Cunningham during the working season of 1861-62. After Cunningham's visit, Kurkihār remains neglected and its mounds became the favourite quarries of modern builders. The site has recently gained public notice by the accidental discovery of a large number of metal images of the Pāla period described by Mr. K. P. Jayaswal.

In this paper the author describes one of the sculptures, a Buddha image, found at the place. The image is made of black basalt and measures 4' 9" × 2' 9". He identifies the image as belonging to the Pāla period about the 11th or 12th century A.D.

2. A. H. HARLEY.—*Abu Nukhailah. A post-classical Arab Poet.*

A biographical account of a well-known poet of the post-classical period of Arab literature, with translated specimens of his compositions, especially of those in *rajaz*-metre, in which he attained considerable celebrity. A note is added on the period of the efflorescence of this metre.

3. S. N. CHAKRAVARTI.—*A sculptured Lintel of Gupta Date from Sārnāth.*

A door lintel with reliefs on its lower face was discovered during the excavations at Sārnāth in 1907-08. The face on which the reliefs are found is divided into six panels. The intervening four panels illustrate a Jātaka scene. Paṇḍit Daya Ram Sahni identified the scene with the Pāli version of the Khāntivādi Jātaka. The writer of this paper, however, identifies the scene with the Kshāntivādi Jātaka in the Jātakamālā, a Sanskrit rendering of only thirty-four Jātakas, ascribed to Ārya-Śūra.

4. G. E. GATES and M. HLA KYAW.—*The Clitellum and sexual Maturity in the Megascolecinae.*

Earthworms of the sub-family Megascolecinae either copulate in an acitellate condition or else in a clitellate condition after which the clitellum disappears.

An attempt is described to discover if the second alternative is a correct explanation.

The following exhibit was shown and commented upon :—

1. CHINTAHARAN CHAKRAVARTI.—*Little known Works of two celebrated Tantric Writers.*

An account will be given, on the basis of the manuscripts of the Royal Asiatic Society of Bengal, of the *Tārāpradīpa* and the *Kālītattva*, two little known works respectively by Lakṣmaṇa Deśika and Rāghava Bhaṭṭa, who are well-known as the author and the commentator of the famous Tantric work the *Śāradātilaka*. MSS. of the works are comparatively rare specially in comparison with those of the *Śāradātilaka* and its commentary. The MSS. that have already been reported are scarcely accessible belonging as they do to private collections many of which are no longer traceable. The Society's MS. of the *Tārāpradīpa* brings up the total number of the known MSS. of the work to six all of which except the one in the State Library of Bikaner are in the Bengali script, showing that the work was little known outside Bengal. Though several MSS. of the *Kālītattva* were reported all that was known of the work was through a short notice by R. L. Mitra in the *Descriptive Catalogue of Sanskrit MSS. in the Library of His Highness the Maharaja of Bikaner*. The Society possesses two MSS. of the work, one of which in the Nāgarī script is fragmentary while the other in Newari script, acquired very recently, is nearly complete with seventeen chapters and is in a fine state of preservation.

Mr. Chintaharan Chakravarti said:—

The works deal with the details of the worship of Tārā and Kālī, the two popular deities that are not treated of in the otherwise comprehensive treatises—the *Śāradātilaka* and the *Prapañcasāra*. It is not unlikely that they were intended to supplement the former with which both the authors were closely associated. Manuscripts of the *Tārāpradīpa* have been noticed by R. L. Mitra (*Notices of Sans. MSS.*, I, 236, 284; *Cat. Sans. MSS. Library, Maharaja of Bikaner*, p. 618), H. P. Shastri (*Notices of Sans. MSS.*, III, 128) and the exhibitor (*Descr. Cat. Sans. MSS., Vāṅgīya Sahitya Parishat*, p. 58). Only two of these MSS. are known to be complete while none of them are dated. The MS. of the Society is, however, both complete and dated. It was copied in 1673 S.E. All the MSS. that have been reported of the work, except the one in Bikaner, are in the Bengali script. The popularity of the work thus appears to have been restricted within Bengal where Tantric digests like the *Tantrasāra* and the *Syāmārahasya* refer to and quote from it. But the work seems to be little known in these days in Bengal or elsewhere. Scholars like Arthur Avalon were not aware of the existence of this work or of any

other work of Lakṣmaṇa except the *S'āradātīlaka*¹ though a number of them are referred to in the *Catalogus Catalogorum* (Vol. I, p. 536). It is a metrical work divided into five chapters (except in the MS. described by Shastri which contains six chapters). It is based on a number of original Tantra texts which are enumerated in the beginning of the present work. It is an independent treatise having no connection with the *S'āradātīlaka* though it is suspected by some people to be a commentary on the latter (*Catalogus Catalogorum*, I, 536). The name of the author is given as Lakṣmaṇa Deśikendra in the colophons to each chapter as well as in one of the introductory verses. In the MS. described by H. P. Shastri this verse as well as the last colophon read respectively *Yādava Paṇḍita* and *Yādavācārya* in place of Lakṣmaṇa Deśika of the other MSS.

The *Kālitattva* (called *Kālitattvarahasya* by R. L. Mitra) which is complete in 21 chapters quotes from and refers to a number of original Tantra works and in one place quotes from the author's commentary on the *S'āradātīlaka*² which was composed in 1550 V.S. (1494 A.D.). No Tantra digest is found to have been referred to though many of them are stated to have been consulted for the preparation of the work. The name of the author is given in one of the introductory verses as well as in the chapter colophons.

No genealogical accounts of the authors, as found at the end of the *S'āradātīlaka* and its commentary by Rāghava are found here. A fragmentary MS. belonging to the Society of a work of Rāghava's grandson called the *Bhuvaneśīprakāśa*, however, shows that the long line of scholars which preceded Rāghava in his family did not end with him but was continued after him by his descendants. Vaidyanātha, for that is the name of the author of the *Bhuvaneśīprakāśa*, a work dealing with the details of the worship of Bhuvaneśvari, introduces himself as the grandson of Rāghava Bhaṭṭa who is represented as one who crossed the ocean of learning.

1. M. MAHFUZ-UL-HAQ.—*A valuable Manuscript of an Urdū romantic Poem (Mathnawī) composed by Sharaf-un-Nisā, a lady of Murshidābād (Bengal).*

On account of absence of the exhibitor this exhibit was postponed to the next meeting.

¹ Preface to the edition of the work in the Tantrik Texts Series, p. 2.

² न च

उल्लेखैव विधानेन ज्ञानं कृत्वा तु मान्दिकीम् ।

वैदिकीं तान्दिकीं सन्ध्यां कृत्वा तर्पणमाचरेत् ॥

इति शारदाटीका-विरोध इति वाच्यम् । (Fol. 6A of the Newari MS.)

The verse quoted is found in Avalon's edition of the work (p. 238).

OBITUARY NOTICES.

SIR RAJENDRA NATH MOOKERJEE.

(1854-1936.)

By the death of Sir Rajendra Nath Mookerjee at the age of 82 on May 15, 1936, the Society loses a Life Member, an Honorary Fellow and a past President.

Born in 1854, in Bhabla, a village near Basirhat, 24 Perganas, Rajendra lost his father early in life and had to depend on his relatives for his education. He entered the Engineering College and later chose the independent business of a contractor.

The reputation which Rajendra Nath acquired as a partner of Messrs. T. C. Mookerjee & Co., won him the favour of a call from the then Mr. (Sir) Acquin Martin who offered him a share in his Company. On Sir Acquin's death, the young Rajendra became a senior partner of Messrs. Martin & Co. Under his guidance the firm showed steady progress and it is at present a leading business organization including the firms of Martin & Co., Burn & Co., the Indian Iron & Steel Company and the Indian Standard Waggon Company.

Besides his business activities, Sir Rajendra was connected with various institutions. He was Secretary of the Calcutta Orphanage, and one of the founders of the Calcutta Club which was started as a place of meeting for Europeans and Indians on equal status. The valuable services he rendered in connection with the Victoria Memorial Hall secured for him a K.C.V.O. in 1922. At the Delhi Darbar in 1911 the King Emperor honoured him with a K.C.I.E.

In 1911 Sir Rajendra was Sheriff of Calcutta. He was for some time Chairman of the Industrial Commission and the Institution of Engineers in India. He was a Member of the Bengal Retrenchment Committee, the All India Retrenchment Committee, the India Coal Committee, the Royal Commission on Indian Currency and Finance and the Howrah Bridge Committee. He was also on the Board of the Imperial Bank of India.

Sir Rajendra delivered several interesting and impressive addresses, of which mention may be made of speeches delivered by him at the Allahabad Industrial Conference, 1910, the Annual Convocation of the Patna University, 1919, the Eighth Indian Science Congress, 1921 and at the Annual Meetings of the Asiatic Society of Bengal. He was the Chairman of the Board of Trustees of the Indian Museum for several years. He was a Fellow of the Calcutta University. A remarkable self-made man as he

was Sir Rajendra was a great personality, a mixture of tactful business discernment and amiable social courtesy. His charity is well known. His was a character of sublime self-confidence, a combination of a gentle heart, unbounded affection and hospitality 'to present to us a rich life which is indeed a triumph of character'. He took a very keen interest in the affairs of the Royal Asiatic Society of Bengal and his loss is deeply mourned by the Fellows and Members of the Society.

U. N. BRAHMACHARI.

PŪRAN CHAND NĀHAR.

(1875-1936.)

The death of Puran Chand Nahar which took place on May 31, 1936, at the comparatively early age of 62, has removed from the learned world of Calcutta and India one of its well-known personalities which was that of a fine scholar and antiquarian, a man of wide culture, and a true gentleman. Mr. Nahar came from the Nahars of Azimganj in Murshidabad District, Bengal, a family distinguished not only in Bengal but also in the rest of India for its public-spiritedness and its devotion to learning and culture, particularly in connection with Jainism. Born in 1875, he took his B.A. degree from the Presidency College, Calcutta, in 1895, and was the first graduate and lawyer among the Jains in Bengal, who are engaged mainly in banking and trade. In 1908 he became an M.A. of the University of Calcutta, and in 1914 he joined the High Court in Calcutta as a Vakil.

Mr. Nahar took a very keen interest in public activities of various kinds, educational, social, and cultural. He was prominent in his own community as a social reformer. For a long time he was connected with the University of Calcutta as an examiner for its various examinations. He was a member of the Benares Hindu University Court representing the Jain Śvetāmbar community of India. His favourite studies were in connection with the history and civilisation of ancient India in general and Jainism in particular, and in consequence he was a member of a great many Oriental and Indological Societies in India and abroad. He joined the Royal Asiatic Society of Bengal in 1908, and in his death the Society mourns the loss of one of its oldest and most prominent members and well-wishers. Mr. Nahar's erudition was recognised far and wide, and he was made an Honorary Correspondent of the Archaeological Survey of India. He also served the community in the capacity of an Honorary Magistrate in Murshidabad, a Com-

missioner of the Azimganj Municipality, and a Member of the Murshidabad District Board.

Mr. Nahar was a distinguished scholar of Sanskrit and Prakrit and published a number of books and papers in English, Bengali, and Hindi. His 'Jain Inscriptions' in three volumes is a corpus of over 3,000 inscriptions from all parts of India, and is valuable for Jain history and epigraphy. He was joint-author of an 'Epitome of Jainism', a comprehensive work on the history and philosophy of that religion.

He made a fine collection of Indian Paintings and Sculpture, Jain and other MSS. and books, and Indian coins and works of art, which are now housed in the *Kumar Singh Hall* at 46 Indian Mirror Street, an institution founded to commemorate one of his brothers. Rare and interesting things from his collections would be exhibited in the Society's premises on the occasion of its annual and other special meetings. He was widely travelled in India.

He has left behind him his widow and four sons and five daughters, besides grandchildren and great grand-children. In his private life, Mr. Nahar was a perfect gentleman whose charm of manner and innate goodness and sincerity and desire to serve and help others made him win the esteem and affection of all. He was one of the most popular figures in Calcutta and elsewhere, and his loss is keenly felt as a personal one among his many friends and acquaintances.

S. K. CHATTERJI.

DR. CHRISTIAAN SNOUCK HURGRONJE.

(1857-1936.)

The death of Dr. Snouck Hurgronje at the age of 80 removes an ardent worker in the field of Islamic research and scholarship. He was a connecting link between the great Islamic savants such as Prof. Dozy (d. 1883), Prof. De Goeje (d. 1909) and others of the past generation and the scholars of the present century.

Christiaan Snouck Hurgronje had been one of the greatest Arabic scholars and the foremost authority on all questions relating to Muhammadan Law.

Born in 1857 in Oosterhout in Holland, he began his studies with Semitic languages and later on he specialized in Arabic which he studied under the famous Nöldeke. In 1880 he obtained his Doctorate from the University of Leiden and subsequently became a Professor of Muhammadan Law at Delft, Holland, in the Institute for the Dutch East Indian Civil Service. In 1884 he went on his famous pilgrimage to Mecca where he lived in

disguise for almost a year and the result of his travels he published in his *Mekka* which is recognized as a standard work. This was translated into English by J. H. Monahan (Leiden, 1931). He was offered a professorship of Arabic at the Cambridge University in succession to Robertson Smith, which he refused preferring to continue with his studies on Islām in the Dutch East Indies. Similarly he declined a professorial chair in Germany and a professorship in Malay language and literature in the University of Leiden. In 1889, he was sent out to the Dutch East Indies on a special mission and in 1891 was appointed Adviser to the Dutch Government for Oriental Languages and Muhammadan Law. In that year, he went to Achin and there he lived as a native of the place for some time and subsequently published his work on the Achinese, *De Atjehers*, which is a standard work on the Achinese. This book was translated into English in 1906.

Dr. Hurgronje had been a prolific writer. His writings are collected and published in five volumes, known as *Verspreide Geschriften*. It is a valuable contribution on different Islamic subjects. He has also written the biography of Prof. Michael Jan de Goeje (d. 1909) under the title '*Levensbericht van Michael Jan de Goeje*' (Amsterdam, 1910).

Dr. Hurgronje was not only a competent Arabic scholar of rare distinction but also an expert in the many Islamic languages of Java and Sumatra, such as the Javanese, Sundanese, Madurese, Malay, Achinese and the like. The Royal Asiatic Society of Bengal elected him an Honorary Fellow in 1927, a distinction which is generally conferred on scholars of international repute. He was also an Honorary Member of the Royal Asiatic Society of Great Britain and Ireland.

During the last twenty-five years Professor Hurgronje had been a Professor of Arabic in the University of Leiden and according to the Dutch Law he had to retire from his appointment on his 70th birthday. His numerous admirers and friends all over the world had united to offer him their homage at the time of his Jubilee in 1927. A sum of over £2,000 was offered to him, which was utilized by him for the foundation of the Oriental Institute at Leiden. This institution has proved to be of great usefulness for Oriental research.

Wherever Islamic studies are cultured, Dr. Hurgronje's name is venerated, and even beyond the strictly Islamic field the importance of his contributions to linguistics, anthropology and many other branches of human learning are equally recognized.

M. HIDAYET HOSAIN.

LIEUT.-COL. R. KNOWLES.

(1883-1936.)

We announce with regret the death of Lieut.-Col. R. Knowles, C.I.E., I.M.S., which occurred in the early hours of the morning of August 3rd at the Carmichael Hospital for Tropical Diseases, Calcutta.

Robert Knowles was born on October 30th, 1883, in India where his father was a missionary. His early education was at Mill Hill School. He went up to Cambridge (Downing) in 1901; here he took his arts degree and commenced his medical studies. From there he went to St. Mary's Hospital, London, and in 1907 took his qualifying diploma, the M.R.C.S., L.R.C.P. It was at St. Mary's Hospital where he worked under Sir Almroth Wright that Knowles first acquired a taste for medical research which was to be the dominating influence of his whole life. He took the I.M.S. entrance examination in 1908 and passed into the service at the top of his batch. After four years of military service he achieved his first ambition, and was put into the then-newly-formed Bacteriological Department which afterwards became the Medical Research Department.

He was posted as Assistant Director at the Pasteur Institute, Kasauli. Here he came in contact with a number of people who had a considerable influence on his life and work—Harvey, McKendrick and, above all, Acton. His first work was carried out with Acton as his collaborator and together these two workers published some important papers on the action of snake venom, on halteridium in pigeons and on other subjects; the first volume of the *Indian Journal of Medical Research* contains eight papers by them. Knowles always maintained his interest in snakes and snake venom, although he had little chance of doing further work on the subject, and the work on halteridium gave him an introduction to protozoology, a subject of which he later became a master.

His work at Kasauli was interrupted by the war, and he was sent to Mesopotamia with the 11th Mahratta Light Infantry. He was wounded very badly in the leg in the battle of Ctesiphon and was mentioned in dispatches, and after a long stay in hospital in India and later in London he was posted as bacteriologist to Cumballa War Hospital in Bombay. As his leg wound had incapacitated him for active field service he was later transferred back to civil employment and was sent to Shillong to open the Pasteur Institute there. This was Knowles' first independent responsible post and he made a very great success out of it. The anti-rabic treatment was only a small part of the functions of the institute. It was practically the only laboratory in the province and it had to be organized to deal with an enormous amount of routine laboratory work. But this was not all; at that time kala-azar was beginning to increase alarmingly

in Assam and Knowles established a kala-azar ward and carried out an investigation on the treatment and on many other aspects of the disease. He worked out a scheme of dosage with sodium antimony tartrate—a drug that Sir Leonard Rogers had just introduced; this scheme was followed for many years in Assam until the new pentavalent compounds came into general use.

It was during this time at Shillong that Knowles met Sir Leonard Rogers; it had been at the latter's suggestion that he started the work on kala-azar. When Sir Leonard left India in 1920 he selected Knowles as his successor at the Medical College. He also left him the far more arduous task of starting the School of Tropical Medicine. Knowles decided to devote the whole of his energies to the latter task; he was appointed secretary of the School and with the aid of Colonel Baptist (then Captain) organized the staffing and equipment of this large and important institution. The next year when the School opened he was appointed professor of protozoology, and he held this appointment until his death nearly sixteen years later.

He was determined that his classes in protozoology should be a success and he devoted an enormous amount of time and trouble not only to preparing his lecture notes but to collecting material from all over the world for demonstration specimens and for issuing to the practical classes. In 1923 he published his lecture notes in the form of a book which the students of the earlier years at the School found invaluable.

This would have been full-time occupation for most men but Knowles with his unbounded energy found time to carry out many important research investigations. He maintained his interest in kala-azar and actively co-operated in the research that was being carried out on the transmission of this disease. The paper that he wrote with L. E. Napier and R. O. A. Smith on the development of leishmania in the sandfly, *Phlebotomus argentipes*, opened a new phase in the investigation of this subject. It would be out of the question here to attempt to enumerate the various investigations which he carried out in the realm of medical protozoology; his published papers covered a wide field, reporting investigations on trypanosomes, leishmania, spirochaetes, amoebæ, intestinal flagellates, and human and simian plasmodia. During his last years he carried out some very important investigations on monkey plasmodium, a strain of which, first discovered at the Calcutta School by some of his associates and distinguished from other simian plasmodia by Sinton, was named after him, *Plasmodium knowlesi*. He and his valued assistant Biraj Mohun Das Gupta were the first to transmit this plasmodium to man. This strain has recently been used in the treatment of neurosyphilis in Europe.

Perhaps Knowles will be best known for his excellent book on medical protozoology. For many years there was no satisfactory book on this subject for the student and it was always

Knowles' ambition to provide one. In the first few years at the School he felt that there were too many gaps in our knowledge to make a book on the subject worth while; he thought that it would be out of date before it was printed. However, at the beginning of 1927 he felt that the time had come to put his notes together and to fill in the gaps, and by the end of the year he had completed the manuscript for his book which he modestly called an *Introduction to Medical Protozoology*. When he had written more than half the book, Wenyon's classical work on this subject came out and Knowles wavered in his intention, but he considered that Wenyon's book did not quite meet the needs of the Indian student and he decided to finish his own book. The new matter which Wenyon's book presented made it necessary for him to expand and even re-write some of the sections that were already finished. The writing of this book was a gigantic task which he completed in an incredibly short time.

Other important books that he wrote were *On the Dysenteries of India* with Acton and on malaria with Mr. S. White.

On a number of occasions he officiated as Director of the Calcutta School of Tropical Medicine.

He was assistant editor of the *Indian Medical Gazette* from 1922 to 1928 and editor from 1928 to 1932; he devoted a very great deal of his time to editorial work and he did much to raise and to maintain the standard of this journal. He was a most facile and lucid writer, and his output was enormous.

During the last few years of his life ill health curtailed his activities; however even then he was not content just to do his routine duties and in 1934 he undertook the task of writing a comprehensive review of the work of the School of Tropical Medicine during the previous twelve years.

He was President of the Medical Section of the Science Congress in 1930 and his Presidential Address on the evolution of medical protozoology was an excellent example of Knowles' best work; it has frequently been quoted in this and other countries. He was always a great supporter of the Asiatic Society and he was for a long time Medical Secretary, and later for a number of years a Vice-President of the Society.

He was a foundation fellow and was also on the Council of the National Institute of Sciences of India.

He was given a C.I.E. in 1935, an honour which many of his friends considered he had earned years earlier.

The medical profession in India and medical research in particular have suffered a great loss through his untimely death.

L. E. NAPIER.

PROCEEDINGS OF THE MEDICAL SECTION MEETINGS, 1936.

FEBRUARY.

A Joint Meeting of the Medical Section of the Asiatic Society of Bengal, the Calcutta School of Tropical Medicine, and the All-India Institute of Hygiene and Public Health was held in the Lecture Theatre of the Calcutta School of Tropical Medicine, at Central Avenue, on Tuesday, the 4th February, 1936, at 3 p.m.

PRESENT.

BREVET-COL. R. N. CHOPRA, C.I.E., M.A., M.B., I.M.S., F.A.S.B., in the Chair.

There were 5 members and 64 visitors present.

The following papers were read :—

1. A. C. UKIL.—*Bronchiectasis—its ætiology, diagnosis, prognosis and treatment.*

Dr. A. C. Ukil, at the request of the Chairman, Col. Chopra, I.M.S., addressed the meeting on Bronchiectasis—its ætiology, diagnosis, prognosis and treatment. The subject-matter of his address was the result of his investigations during the last 4-5 years. Bronchiectasis was thought to be comparatively infrequent in India and very little investigation has therefore been conducted on the subject. He believed that his investigation was the first of its kind in India.

The first result of the investigation was to show that bronchiectasis was fairly prevalent. A large number of cases of recurring hæmoptysis seen and thought to be due to tuberculosis was found to be cases of bronchiectasis after careful clinical, radiological bacteriological examinations (including guinea-pig inoculation), and lipoidal injection. Of 164 cases studied 80 showed evidence of bronchiectasis.

Four types of bronchiectatic dilatations were noted. Cylindrical saccular, cystic and abscess. These were not distinct types, but merely marked the stages of dilatation present, which commenced simply as a cylindrical dilatation of the bronchial tubes and ended in big cavities denoting abscess formation. A diagram was put up illustrating these various types of dilatations.

Ætiology.—In America it was thought to be due to foreign bodies. In his series of cases there was no question of foreign bodies. His cases mostly occurred after infections like pneumonia or were due to infections with fusiform bacilli. 37% of cases occurred after lobar pneumonia.

Types of Bronchiectasis.—There was the congenital type and the acquired type, these in turn could be either of the wet or dry type according to whether much or no sputum was expectorated.

The congenital type was due to atelectatic conditions and were usually of the dry variety. The speaker referred to a patient who consulted him for dysentery. Examination showed rales to be present.

over a large part of the chest. Lipoidal was introduced and extensive bronchiectasis was found in the upper lobe. There was no history of expectoration; wasting and clubbing of the fingers were absent and the case was undoubtedly one of congenital bronchiectasis.

The acquired type was seen usually in cases of recurring hæmoptysis. No T.B. found. Lipoidal injection showed cup-like dilatation. The hæmoptysis was probably due to rupture of the young blood vessels present in the granulation tissue. It was secondary to various diseases like pneumonia, influenza and measles.

A large number of skiagrams was shown demonstrating the various types of dilatation seen in bronchiectasis and illustrating the various types and ætiological factors commented upon by the speaker.

Diagnosis.—This rested on the history, clubbing of the fingers, diminished movement of the chest wall especially retraction of the affected side and the presence of rales. These rales were specially valuable. It was a sort of creaking noise audible during both inspiration and expiration. Lipoidal examination was the clinching test.

Prognosis.—Varies. In India the patients treated with palliative measures could carry on for years.

Treatment.—In children conservative treatment was best. Good hygienic surroundings, high caloric diet and fresh air. If much sputum was expectorated, do bronchoscopy and promote drainage. If fusiform bacilli or spirilla present give N.A.B. injections.

For chronic cases palliative treatment is of little value. Vaccines also do little good; but if given the vaccine should be prepared with organisms isolated from sputum obtained by bronchoscopy. Surgical treatment is best. Artificial pneumothorax may be done when no adhesions are present. Phrenic avulsion or thoracoplasty may be required or even lobectomy of the lung may be done. Tudor Williams gives a 8% mortality rate for such cases.

Discussion.

1. Dr. J. C. Gupta inquired whether among the palliative measures to be adopted postural treatment and lung exercise could be included as being beneficial.

2. Dr. Gurbux Singh wanted to know how the friction rales was produced and how it differed from friction sounds.

3. Dr. G. Panja inquired as to the percentage of the different types of micro-organisms present in the sputum of bronchiectasis cases.

4. Dr. Seal asked if there was any danger or unpleasant symptoms when lipoidal was given. One of his cases had nausea, vomiting and hæmoptysis and two cases showed symptoms of iodism after lipoidal treatment.

Dr. Ukil answering said that postural treatment was an old and backward method. To be done properly the patient should be kept at an angle of 45° for a fairly long time. Special tables were required and these were not available here. It also caused oedema of the mucus membrane which impeded free drainage. The treatment may however be adopted after bronchoscopy. When doing bronchoscopy one had to be careful, as the blood vessels of the granulating surface ruptured easily and a big hæmorrhage may be provoked.

As regards Dr. Gurbux Singh's question the lecturer said it was difficult to say how the rales were produced; possibly they may be produced by fibrosis and dilatation of the tubes; it was certainly not produced by friction. As regards the nature of the rales it was more a creaking noise rather than a friction sound. It was difficult to describe but easily demonstrated. Once heard it could thereafter be easily distinguished.

Turning to Dr. Panja's question, Dr. Ukil said hæmolytic streptococci were usually the predominating organisms, then non-hæmolytic streptococci. Gram positive spore bearing organisms were also present. Pneumococci and fusiform bacilli are found in 50% of the cases.

Answering Dr. Seal, Dr. Ukil said that he had experienced no after effects. Of course if lipoidal enters the tissues it causes some inconvenience. If swallowed it will be present in the stomach and may cause nausea. Brompton Hospital figures are one death among 1,064 cases.

Col. Chopra in bringing the discussion to a close thanked Dr. Ukil for the interesting lecture, the more so as it was the first of its kind in India. Lipoidal was not dangerous in expert hands. He added that he was surprised that there had been two cases of Iodism. He was indeed very grateful for the interesting paper.

2. K. V. KRISHNAN.—*The mechanism of hæmolysis in malarial hæmoglobinuria of monkeys.*

Summary.

With a view to finding out the nature of the hæmolytic agent, if any, that is responsible for hæmolysis and hæmoglobinuria in monkeys infected with *P. knowlesi* we studied the biochemical changes in the blood of the following four groups of infected monkeys, namely.

1. Splenectomised monkeys developing hæmoglobinuria.
2. Splenectomised monkeys not developing hæmoglobinuria.
3. Non-splenectomised monkeys developing hæmoglobinuria.
4. Non-splenectomised monkeys not developing hæmoglobinuria.

Special attention was paid to the following constituents: cholesterol—total, free, and ester; total fatty acids; inorganic and organic phosphorus; and glucose. The results indicate that hæmolysis and hæmoglobinuria are associated with a fall in free cholesterol and a rise in ester cholesterol; no change in total fatty acids; a rise in inorganic and organic phosphorus; and a fall in glucose. These changes when taken along with others suggest liver damage and an upsetting of the glucose and fat metabolisms. If this view is correct then it is possible that the hæmolytic agent, if any, responsible for the hæmolysis, is only a product of altered metabolism as for example a higher member belonging to the unsaturated fatty acid group and that it acts when free cholesterol is low. It is suggested that the agent causing hæmolysis in blackwater fever in man is also of a similar nature.

Dr. Krishnan said:—

One of the unsolved problems in blackwater fever is that which relates to the mechanism of hæmolysis. The questions awaiting an answer are whether the hæmolysis is due to a simple phenomenon like osmosis or whether it is due to a more complicated process associated with

some chemical agent and if the latter what is the nature of this agent. Is it lactic acid? Is it an autohæmolysin? Is it a toxin elaborated by a specially virulent biological strain of the malarial parasite? Or is it some product of abnormal metabolism.

A large number of investigators have attempted to study these questions in human cases of blackwater fever but the results so far obtained have been very divergent and inconclusive. The chief reason for this has been, the lack of suitable experimental material. Firstly, it is common knowledge that blackwater fever cases are not too numerous even in the so-called endemic areas, and secondly it is not possible to make any serial observations in any one individual from the normal to the blackwater stage as can be done in experimental animals. The recent finding by Napier and Campbell of a monkey plasmodium capable of producing hæmoglobinuria in rhesus monkeys has to some extent overcome this difficulty and given a fresh impetus to the study of the problems connected with hæmolysis and hæmoglobinuria. The present position with regard to the relation of this plasmodium to hæmoglobinuria is :—

- (1) Ordinarily it causes hæmoglobinuria in about 30-40 per cent. only of rhesus monkeys.
- (2) It does not cause hæmoglobinuria in *irus* or *radiatus* monkeys.
- (3) After splenectomy the incidence of hæmoglobinuria is increased not only in rhesus monkeys from about 30 to 80% but also in the *irus* and *radiatus* monkeys from 0 to about 30-40 per cent.

This gives, so far as the *rhesus* monkeys are concerned four groups for study, viz. :—

- Splenectomised monkeys showing hæmoglobinuria.
- Splenectomised monkeys showing no hæmoglobinuria.
- Non-Splenectomised monkeys showing hæmoglobinuria.
- Non-Splenectomised monkeys showing no hæmoglobinuria.

Although in monkeys the hæmoglobinuria is associated with an intense parasitization and on that account some have suggested that the hæmolysis can be explained on the basis of mere sporulation of the parasites, a closer study of the condition has indicated that it would be necessary to assume that a hæmolytic agent is involved before a full and satisfactory picture can be had. If such an assumption is made then there are several methods of proving or disproving it.

Firstly, we can demonstrate that the plasma or serum of hæmoglobinuric monkeys causes lysis of red cells. This we tried to show but the results were inconclusive. A hæmolysin which acted in dilutions up to 1 in 100 was detected in 4 out of ten monkeys studied; three of these belonged to the hæmoglobinuric group and one to the non-hæmoglobinuric group.

Secondly we can try to isolate the hæmolysin by chemical methods. This could be done only if one knows what the nature of the hæmolysin was. We tried to do this in an indirect way by studying the 'idine number' but the results were unsatisfactory.

Thirdly, we can demonstrate by indirect means that a hæmolytic agent is present and obtain an idea as to what its nature is. This we have attempted to do by a detailed study of the biochemical alterations in the blood of the four groups of monkeys referred to with special reference to constituents such as cholesterol, glucose, organic and inorganic phosphorus. In all over a thousand estimations have so far been done and from the results obtained we are lead to believe that the factors involved in mechanism of hæmolysis are as follows :—

- (1) Free cholesterol plays an important part; when it is high it inhibits hæmolysis and when low favours it.

(2) The agent causing hæmolysis is one that is influenced by free cholesterol.

(3) The low glucose, the rise in inorganic phosphorus, lecithin and ester cholesterol all show hepatic embarrassment and abnormal metabolism of carbohydrates and fats.

(4) The increase of ester cholesterol and organic phosphorus suggests, probably, an increased output of fatty acids.

(5) Therefore it is concluded that the hæmolytic agent is a product of abnormal metabolism probably of the nature of an unsaturated fatty acid which acts not by virtue of its acid character but because of its inherent hæmolytic property. It is too premature to state what the significance of these results is to human blackwater fever. It is possible that the mechanism of hæmolysis is the same as in the monkey. Only that in the latter the predisposition is brought about rapidly while in man it is brought about slowly and steadily through repeated attacks of malaria in susceptible individuals.

Summary.—

Mechanism of Hæmolysis may be

A. *Physical*

1. Osmosis.

or B. *Chemical*

1. Acids (lactic acid).
2. Auto-hæmolysins.
3. Toxin of parasite.
4. Hæmolysin arising out of altered metabolism. (Unsaturated fatty acids lysolecithin.)

Evidence in favour of B. (4).

Marked depletion in glucose.

Increase of inorganic phosphorus.

Increase of organic phosphorus as lecithin.

Marked depletion of free cholesterol.

The hæmolysin acts when free cholesterol is low. Hæmoglobinuria occurs when reticulo-endothelial system fails to dispose of the hæmoglobin liberated.

Discussion.

Col. *Chopra* opened the discussion by saying that he found the lecture very interesting. He had worked on the subject of hæmolysis in connection with snake venom. He found that when lecithin was present hæmolysis occurred. He found no fall in cholesterol.

Dr. *Krishnan* said: In the case of snake venom it was well known that lecithin was required for the formation of lyso-lecithin. In the hæmoglobinuria of monkeys also the lecithin content was very high prior to hæmolysis. With regard to cholesterol we also did find a fall in the total cholesterol in a certain percentage of cases. But when cholesterol was estimated separately as free cholesterol and ester cholesterol a fall in free cholesterol was always present. Possibly if Col. *Chopra* had estimated the cholesterol content separately he also may have obtained similar results.

Dr. *J. C. Gupta* asked about the theory of lactic acid in hæmolysis and wanted information on the part, if any, the Reticular Endothelial System played in the causation of the condition.

Answer.—The theory of lactic acid in the causation of hæmolysis is an old one. It depended upon the alteration of the Hydrogen ion concentration brought about by the acid. The recent work of Ross had shown that the necessary alteration in the H ion concentration could be only obtained when large quantities of acid were present and that this

large quantity was incompatible with life. The theory however in a way supports our findings of an upset in the carbohydrate and fatty acid metabolisms. The point of difference between the lactic acid theory and our own is the nature of the acid concerned. We believe that the hæmolyzing agent is a lower member of the fatty acid series which brings about hæmolysis, not by virtue of its acid properties but by virtue of its inherent hæmolytic quality.

With regard to the reticular endothelial system: the system is important not in hæmolysis but rather in the duration and extent of hæmoglobinuria. I have already said that hæmoglobinuria occurs when the reticulo-endothelial system fails to dispose of the hæmoglobin liberated.

Dr. S. Mukherjee asked how far the physical changes brought about by the chemical alteration in lipoidal was responsible for the hæmolysis.

Answer.—We have not estimated the lipoidal changes separately in the plasma and in the cell and therefore we are not in a position to state what part the physical factors play in hæmolysis. We pointed out the importance of the ratio between cholesterol and lecithin. After all physical factors are dependent upon the chemical alterations.

Dr. Senior White asked how the speaker would explain the prevalence of blackwater fever in certain hyperendemic areas and in certain houses and families on the basis of a chemical alteration in the host. If chemical alteration was the cause of hæmoglobinuria we should expect to find blackwater fever more widely spread. His own experience was that his case was sharply limited to a small area of less than 12 miles extent. Perhaps much depended upon the virulence of the infecting malarial strain. He also asked what strain was used for the experiments as there were now several strains of *P. knowlesi*.

Answer.—I have already stated that biological strain was probably concerned, not in the sense of a toxigenic strain but in the sense of its biochemical activity, i.e. its mode of attack of some of the known constituents. The strain used by us was obtained through Col. Knowles from Col. Sinton. I am told it is a pure strain.

Dr. Das-Gupta asked whether the lecturer had noted hæmoglobinuria in monkeys showing no parasites.

Answer.—No. But the degree of parasitization varied from 30 to 80% in monkeys.

The meeting closed with a vote of thanks to the chair.

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